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The Journal of
MEDICAL EDUCATION

Official publication of the Association of American Medical Colleges, 185 N. Wabash Ave., Chicago 1.

The Journal of MEDICAL EDUCATION is owned and published monthly by the Association of American Medical Colleges, 185 N. Wabash Ave., Chicago 1; Phone, STate 2-8870. Entered as second class matter January 17, 1930, at the Post Office, Chicago, Ill., under the Act of March 3, 1879.

EDITORIAL BOARD: Lowell T. Coggeshall, Chicago; William B. Bean, Iowa; James Faulkner, Boston; Chauncey D. Leake, Texas; Robert A. Moore, Washington (St. Louis).

STAFF: Editor, Dean F. Smiley; Assistant Editors: Tess Snyder, Jeanette Ninas.

EDITORIAL POLICY: Neither the editors nor the Association assumes responsibility for statements made by individual writers.

SUBSCRIPTION RATES: $7 per year; $1 per single copy; foreign $8 per year; $1.25 per single copy.

COPY DEADLINE: Copy for typesetting must be in by the 1st and plates by the 10th of the month preceding publication.

NATIONAL ADVERTISING REPRESENTATIVE: Gordon M. Marshall, 30 W. Washington St., Chicago 2, Ill.; phone, DEarborn 2-5148.

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Printed in U.S.A.

The Problem of Maturity in Psychiatric Research

LAWRENCE S. KUBIE

IN A RECENT article in *Science*,[2] it was pointed out that a process of starvation is hampering the progress of psychiatric research; and that this is a threefold starvation: of ideas, of mature personnel and of money. That article considered only the third of these: ". . . not out of an illusory hope that money alone can solve scientific problems, but because the lack of it accentuates the shortage of matured personnel, which in turn contributes to the poverty of ideas."

This article will consider only the second form of starvation—the lack of trained personnel—stressing the importance of full maturity rather than numbers. A program of training for psychiatric research will be outlined, and the type of organization will be described in which such investigators could carry on their work most productively.

Recently an experienced and wise scientific investigator surveyed psychiatric research here and abroad. Subsequently he wrote me that he had arrived at a number of distressing conclusions. He found that research in the varied psychological and psychiatric fields is carried on predominantly in the left-over fragments of time of men who are too overburdened by other responsibilities to do creative work. Furthermore, a majority of these men seemed to him to be inexperienced in a variety of vital ways. Many of them he characterized as "academic amateurs." He explained that by this he did not mean beginners, but rather that they were amateurs in the sense that they had never left the cloisters of university departments of psychology or the almost equally cloistered atmosphere of departments of psychiatry in medical schools. He also commented that although bits of valuable investigative work were done occasionally by a few overworked private practitioners, these had simultaneously to practice, write, teach and do research. My correspondent felt this to be an impossible undertaking. On the basis of his impression of the overall situation, he concluded that under present circumstances psychiatry could make no further basic advances, and he went on to wonder whether there was any way to improve this stultifying situation.

Because the technical and organizational and personnel problems of psychiatric research are so peculiarly complex, I have often wished that we could bring to bear on them the

Dr. Kubie is clinical professor of psychiatry at the Yale University School of Medicine and a member of the faculty of the New York Psychoanalytic Institute. This article is based on a lecture presented at a meeting held under the auspices of the Austen Riggs Center for the Study and Treatment of the Psychoneuroses in New York City, May 1951.

statesmanship that is embodied in Alan Gregg's volume,[1] "The Furtherance of Medical Research." Certainly my friend's challenging observations suggest that no wisdom less than this will suffice. It is Dr. Gregg's unique gift to be able to show how the best can become attainable and no longer "the enemy of the good." This discussion will attempt to emulate him.

Effective psychiatric research requires of the investigator a maturity composed of several ingredients: a quality of maturity as a human being, which few achieve and then usually too late; a broad cultural maturity plus a mastery of special theory and experimental techniques, which requires decades of study and specialized training; maturity of clinical experience, both in hospital psychiatry and in office practice, which adds even more years to the long period of preparation.

Each of these needs will be discussed in detail later. At this point I will point out only the fact that the mere effort to educate one individual in so many fields and for so many years often makes unattainable the very maturity at which it aims, unless the training is interspersed with periods in which the scholar accepts both the practical challenges of life and the scientific challenge of testing out his growing knowledge independently. The persistent immaturity of the perpetual student is a familiar phenomenon on every campus and when any training program lasts too long, independent spirits tend to drop out along the way until only the docile, submissive and uncreative survive the full "indoctrination." This problem is of particular importance in psychoanalytic psychiatry; and some way out of this dilemma must be found if prolonged training for psychiatric research is not going to defeat itself. This is one of the central problems with which this paper will be concerned.

At the same time, reasons will be presented for believing that in addition to and apart from the departments of psychiatry for teaching and the routine care of patients, we need small parallel institutes for psychiatric research in our medical schools, the staffs of which will require special preparation for advanced research and protection from routine responsibilities except those which will contribute directly to the research program. All of this implies fundamental changes in our ideas of how to finance such institutes (Kubie [2]), how to staff them and how to train their staffs.

Because the last 50 years have been years of revolutionary developments in the history of human culture, these problems are challenging us with special urgency today. Simultaneously they have given us a new understanding of the hidden structure of matter, and the beginnings of an understanding of the hidden structure of the mind: two streams of scientific development which are now converging to produce new insights into those facets of life popularly called "body and mind."

In this development the special function of psychoanalysis has been to demonstrate the role of unconscious psychological processes in human life, to provide a tool for the exploration of unconscious processes, and in modest measure to make it possible to lessen the distortions which these engender. These psychoanalytic studies have shown us that every soaring achievement of the human spirit, every highest cultural, intellectual, artistic, scientific and

spiritual creation depend upon our ability to think in symbolic terms, a process which from its earliest inception in childhood is subjected to various distorting influences. Consequently, our highest capacities depend upon something which is peculiarly human, but which at the same time is peculiarly vulnerable in that special way which produces the neurotic process.

We are not wise enough as yet to know how to bring up our children so as to avoid this distortion of the symbolic process, and for our ignorance we pay throughout life in the currency of neuroses, delinquency, psychopathy and psychoses. Without the symbolic capacity and its distortions there could be no such thing as a neurosis; this is why the neuroses (and most psychoses) are as much the hallmark of the human being as is his music, literature, art, philosophy, religion and science. Thus the greatness of man and his frailty are intimately interwoven, and the neurotic process is universal among human beings. All of this we have learned through the researches of psychoanalysis into the troubled human spirit.

It is a further outcome of this insight into the nature of the neurotic process and its universality that the concern of modern psychiatry is no longer limited to the hospitalized psychotics, so many of whom are the end-results of untreated neuroses. Modern psychiatry focusses rather on the origins of mental illness in early deviations from the so-called normal, in the effective treatment of these deviations in their early phases and, ultimately, in their prevention.

In the effort to understand how and why distortions of the symbolic process arise, the psychiatric investigator studies the influence of all chemical and physical forces on their genesis, the impact both of exceptional early events on the lives of individuals and of the more universal among life's experiences and, finally, the effects of the broader sweep of social, economic and cultural forces as well. Thus, modern psychiatric research involves parallel studies of the interactions of multiple determinants. Such investigations imply a mastery of more different disciplines than the medical scientist is usually called upon to master and employ.

Ingredients of Psychiatric Maturity

1. **Emotional Maturity:** Since the stuff which the psychiatrist studies is human life itself, it is not only in various technical fields but also in his own judgment, feeling and experience that he must be mature. This is never easy for any human being to achieve unaided. A very few reach such maturity early, almost by happy accident. Even under favorable circumstances, however, many grow old without distilling maturity out of their life experiences. Others achieve maturity late, and only after long floundering through many errors and with much help. How then can we develop psychiatrists for research who will be mature not only in a technical sense, which is difficult enough, but also emotionally?

Actually the full solution of this problem goes beyond the scope of this paper, since the psychological immaturity of men of adult years is a measure of the failure of our methods both of child-rearing and of formal education. Although it requires years to emerge from immaturity, years alone are never enough. At first thought it would seem that after his graduation from college, the 10 to 14 years it takes to complete

the clinical training of a psychiatrist would give time enough for him to acquire both technical and human maturity. Yet these years usually fail in both respects. It has long been recognized that the time needed to train a psychiatrist limits the supply of competent therapists for the community as a whole and creates serious economic problems for the psychiatrist himself. It is not so generally realized that it also may hamper the young psychiatrist's own emotional maturation, which in turn limits his value in any program of psychiatric research.

To achieve rounded maturity the psychiatrist, as anyone else, needs to experience the responsibilities which other adults assume. He must have felt some of the aches and pains of life if he is to evaluate properly their impact on the lives of others. It is not necessary for him to undergo every stress to which human beings are exposed; but he must have experienced enough of them so that he can identify himself with those who come to him in need. This implies that for some years at least he must have faced marriage and children and the psychological and practical financial problems of a home, without the protection and support of an assured academic status. At the same time he needs the experiences of carrying independently the responsibility for making and implementing grave decisions which profoundly affect the lives of others without leaning on the moral support of a group of older colleagues or the prestige of some great institution.

As our educational process lasts longer, unless the graduate student is exposed concomitantly to maturing personal and clinical experience he continues to live even longer years like an adolescent. Consequently, too many decades spent in academic cloisters can constitute an even greater handicap for the psychiatrist than for his academic brothers. In planning a program we must remind ourselves that the slow passage of time makes maturity possible, yet never guarantees it; that without the challenge of independent responsibilities—personal, professional and clinical—the duration of psychiatric training tends in itself to limit the emotional maturation which is so important a component in the equipment of the psychiatrist.

2. Clinical Maturity: In every field of medicine it has been shown that the full-time system pays a high price whenever it fails to make clinical maturity a prerequisite for appointments to posts which carry clinical responsibilities. This is especially true in psychiatry, where the investigator must have reached maturity as a clinician before he can be effective in research.

This confronts us with another complicating fact: to acquire broad clinical maturity in psychiatry takes longer than in any other field of clinical medicine. From the technical standpoint, even when a man at the age of about 35 has completed the formal steps in his training for the practice of psychiatry and will be reasonably competent in diagnosis, he still will be immature in therapy, and far too inexperienced in psychiatric judgment for mature research. His full preparation for selective or definitive therapy and for further research in the therapeutic process requires additional years of practical clinical experience. Under existing conditions, for reasons indicated below, several of these must be spent in private office practice. It is conceivable that alternative ways of attaining equivalent experience

will be worked out in the future, but they do not exist now.

During his hospital years, the young internist, gynecologist, laryngologist or surgeon can study hundreds or even thousands of patients each year. In the same period the young psychiatrist can study adequately only a handful. This is because the intensive study of each individual patient in psychiatry involves two unique and time-consuming processes: (a) the exploration of a special kind of relationship with his patients; and (b) the observation, study and evaluation of changes in patients which can occur only slowly over the course of weeks and months.

No matter how adept the young psychiatrist may be, he cannot establish a meaningful relationship with more than a limited number of patients at any one time: at first perhaps with only one or two, later with eight or ten. Furthermore, no matter how quickly he might be able to learn, his patients will not change more rapidly merely to suit either the student's capacity or his need to hasten. Consequently, in this essential aspect of clinical maturation the pace at which any student can develop is limited by the rate at which his few patients will change. There can be some shortening of this process through the use of various modern aids such as special types of continuous case seminars, group work, sound recordings and sound pictures of interviews with patients, but these always will have to be supplemented by the student's plodding work with his own patients.

Even more time-consuming is the final step of technical maturation: the study of the relationship between conscious and unconscious levels of the symbolic process. As has already been indicated, this is the critical experience from which is learned most of what we know of psychopathology, and this essential ingredient in the training program involves the slow processes of the preparatory and supervised psychoanalysis. It also implies a mastery of the entire field of clinical psychology, with its complex theoretical assumptions and its special testing procedures.

3. Maturity as a Theoretician: The mature research man also must have reached maturity as a theoretician. Here there can be great variability in pace. In psychiatry (psychoanalytic and otherwise) as in all medicine, some excellent clinicians never achieve theoretical clarity, even when they have been in the field for many decades. They are relatively valueless in research.

There are others who quickly achieve theoretical facility, but remain incapable of objective clinical evaluation because they view everything through glasses tinted by the preconceived, untested and naive theoretical concepts which they have mastered too quickly and too verbally. Such men abound in psychiatry, and especially in psychoanalytic psychiatry. Since their own individual quirks make it impossible for them to evaluate with precision the theoretical implications of their ideas about the patients for whom they are responsible, they are quite as valueless for research as is the clinician who is naive or confused in his theoretical concepts.

It is perhaps some consolation to reflect on the fact that with respect to each of these ingredients, maturity once achieved can rarely be wholly lost. Until the senilium overtakes us, the human being never loses maturity. As a clinician the individual may lose some finesse, but never the

whole backlog of experience. The individual never loses maturity as a basic theoretician. Unfortunately, however, this is not true of the next ingredient in scientific maturity.

4. Maturity in Experimental Techniques and Procedures: Psychiatric research requires facility and sophistication in many kinds of experimental procedures. That is to say that the research man must have not only the creative imagination and the "insatiable curiosity" of Claude Bernard, but he also must know how to conduct controlled experiments of various kinds in the laboratory, in the clinic and in the social field. This requires the mastery, or at least an operational awareness and command, of a varied array of highly specialized technical processes, ranging from the most modern electronics, nuclear physics and biochemistry to enzyme action, the biochemistry of the endocrine system, modern electrophysiology of the nervous system, all routine and special clinical procedures, clinical psychology, psychoanalysis, polling techniques, punch card systems, statistics and higher mathematics, techniques of anthropological and sociological investigations and all auditory and visual recording devices, etc.

Such words can be reeled off quickly enough, but each word stands for a field of scientific work to which many individuals devote their entire scientific lives. The modern investigator of psychiatric problems at least must be able to coordinate all of them. He must understand not only his special field, but also a large number of allied, contrasting and highly specialized areas of knowledge, in each of which he must struggle constantly to keep up to date. Our more sensible scientific colleagues are content to spend their lives in one field alone. The psychiatrist attempts to master many.

This statement is borne out by the titles of the papers presented at recent meetings of the American Psychiatric and American Psychoanalytic associations. They covered such widely scattered fields as the relationship of psychiatry to the social sciences, to our social and cultural system, to political ideas and to international relations; comparisons of different lands with respect to their psychiatric problems and to the public and private provisions for the care of those people with them; the impact of psychiatry on culture, literature, art and religion; its influence on medical education in general; special provisions for the training of psychiatrists; psychiatry in relation to education in general and to the training of nurses and teachers; mental hygiene programs in elementary school, high school and college; anatomical and physiological studies in patients with emotional disorders; the impact of certain of the newer hormonal preparations on various psychological states; pathological grief states at different periods of life; a comparative study of a wide variety of therapeutic methods (electrical, chemical and psychological and of various combinations of these); special problems of treatment in various types of disturbance; individual methods versus group methods of treatment; psychological and chemical problems in alcoholism and drug addiction; physiological and chemical anomalies which occur in health and in different types of mental illness from early childhood to old age; a comparison of the psychological disturbances of old age and of infancy; psychometric and projective tests from infancy through the senilium; problems in rehabilitation; the relation of tu-

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Thus, many streams flow together to make a psychiatric investigator, and in each of these maturity of critical judgment must be attained. Sometimes such growth can proceed in several fields simultaneously. Those geniuses are rare who can master many areas of technical knowledge within a reasonable span of years. For most of us this is impossible. We cannot work concurrently in too many areas at once, but can learn them only one by one, and can never master them all. It would take too many years to produce such supermen of psychiatric science. Therefore, mature research must be carried on by teams, but each member of the team must have mastered more than one of the component disciplines. This implies that we must recruit and train teams of men who are scientifically "polylingual," and who can understand one another.

Conflicts within the Team

Unfortunately, not all scientifically gifted men are endowed with psychological aptitude. With occasional rare exceptions, the more touched with genius in fields of organic research a man may be, the more likely is he to be a psychological moron. I could cite "psychiatric" investigators whose contributions to psychiatry are nullified by their psychophobic reactions to all things psychological, just as I could name psychological research workers who are equally organophobic. These conflicting biases tend to create a clash of temperaments although they should be interdependent. Those who are capable of psychological sensitivity and imagination pit themselves against those who, however skilled they may be in the organic components of research, are incapable of dealing with the complexities of psychological facts except by oversimplifying them out of existence, and vice versa. As a consequence, wherever leadership in research is vested in a biased representative from either side the essential contributions from the other side are likely to be slighted, and whatever experimental work is done tends to develop an unbalanced emphasis in one direction or the other.

These considerations lead to the conclusion that we must develop a new leadership in psychiatric research—men who will be like great orchestral composer-conductors. They will not be virtuosos on every instrument in the band. Their skills in individual fields will not be comparable to those of their assistants and associates. Yet, like the late William H. Welch, who said of himself that he could never complete any research of his own, they will know each instrument in the band sufficiently to judge

the skill of the player and the worth of his contribution to the ensemble, and can either create or find new scores to challenge the best performance of the orchestra as a whole. These are the men we need in this complex field.

A Program of Training

How are "conductors" trained in scientific research? How long does it take? Is enough *time* allowed? Alan Gregg[1] quotes an important German scientist who was visiting this country and who, on his return to Europe, said, "When the Americans discover that a man is superbly fitted for some type of scientific work, they reward him with a position in which he can no longer pursue it."

We have seen this happen often when brilliantly-gifted young scientists are placed in positions in which they are so overburdened with administrative and teaching responsibilities that they lose touch with their own fields. This is a modern "Massacre of the Innocents," and in every field of medical research our universities and our research foundations and science as a whole pay an enormous price for this misuse of manpower. Nowhere, however, is the price quite as high as it is in psychiatric research. This accounts for the failure of our investments in psychiatric research to yield mature fruit more than any other single fact.

Of course, there also have been blunders in the selection of men for key posts. Occasional human mistakes of this kind are unavoidable. But the price we pay for choosing the wrong man is minute as compared to the price we pay for misusing the right men; i.e., for placing young men of outstanding promise in posts which are bound to stunt their research potential permanently.

This price is paid not only by the young man himself, but by psychiatry as a whole, because whenever a field is expanding rapidly so that many medical schools are creating new posts in psychiatry which have to be filled, an entire generation of the most promising young scientists can be drained out of research into administrative and teaching functions. The result is that the very effort to advance the science stunts its growth. This is precisely what is occurring in psychiatry in this country today.

If we stop to consider the functions which the head of a department of psychiatry in a medical school is called upon to perform, to organize and to supervise, it will be clear why it is necessary to protect the investigator from such entanglements:

A. The professor is supposed to conduct, organize, supervise and set standards for a psychiatric hospital. However small the unit, this will consume much time and energy, especially if he has to take part in planning the construction of the plant itself, a task which can easily devour the major part of two or three of his precious growing years.

B. He must also plan and supervise in the same way one or more kinds of psychiatric outpatient clinics for his hospital, and perhaps for community agencies and for the local, state and veterans' mental services.

C. He has to organize the interrelating of his psychiatric service with other departments of the hospital. This means not only the setting up and staffing of appropriate clinical units to assign to these other departments, but also the time-consuming task of establishing good working re-

lationships, and of allaying interdepartmental rivalry, jealousy and deep-seated anti-psychiatric prejudices. This alone is a full-time task. Furthermore, it is never-ending, since each successful step forward is felt by some to be an unwarranted encroachment on their special fields. This provokes new resistances with which the younger members of the respective staffs cannot deal unless there is a continuous background of close liaison at top levels.

D. He must provide psychiatric services to the school of nursing, to medical students and to his colleagues on the hospital staff and on the medical school faculty. Paradoxically yet inevitably, the better the service he provides to hospital patients and the better the teaching his department gives to students, the more incessant become the demands for help which reach him from individuals in these other groups. Through him these individuals may have had their first opportunity to watch psychiatry in action, with a growing realization of their own needs. What is more, much of this demand comes from top-level staff members, many of whom cannot be handed over to younger colleagues without endangering interdepartmental rapport.

These are the demands on the professor's time for psychiatric diagnosis, therapy and disposition which arise in any modern teaching hospital. What are the demands made by the requirements of teaching itself, the primary function of any medical school?

E. From time to time the professor himself must teach at every level if he is to set standards, maintain them and keep in touch with the ever-changing quality of the educational needs in psychiatry. The amount of the load which he must carry personally will vary continually as he shifts from one group to another, as his department grows and as he assigns and reassigns his assistants. However, he dare not lose touch with any group of students for long. These groups consist of elementary and advanced medical students, his house officers, his own senior staff (who have come to work under him and to learn from him), the house staffs of other departments, senior colleagues from other departments, the nursing staff, general medical and psychiatric social workers, occupational therapists and attendants of various categories and grades. Conferences are required for the planning of curricula and for the distribution of tasks, in addition to the time which the teaching itself absorbs.

F. Administrative responsibilities constitute the next group of drains on the time and energy of the head of a department of psychiatry in a medical school. Among these are: (1) screening and selecting his own staff to meet the needs of a continuous gradual turnover and expansion; (2) handling of intradepartmental problems of advancement, promotions, rivalries, etc.; (3) intradepartmental administrative conferences; (4) participation in many general medical school problems which require interdepartmental conferences, committee meetings and innumerable individual interviews to deal with such problems as entrance requirements, individual admissions, allocation of curricular time, allocations of space and funds, the general planning of the school curriculum, etc.; (5) participation in a constant stream of inter-medical school conferences on overall problems of the financing of medical education, its gradual evolution to meet modern needs, the changing role of psychiatry in comprehensive

medicine, etc. Many of these conferences require lengthy trips out of town.

G. In these days especially there are additional drains which arise through many government and state agencies. These include various committees of the National Research Council, the mental health section of the Public Health Service, the psychiatric services of the Veterans Administration and of the various branches of the Armed Forces, other government agencies which seek psychiatric guidance and advice on matters of national defense and of international relations and policy, the state mental health services, etc. A conscientious and public-minded departmental chief cannot turn away from any of these. Furthermore, the broader a man's viewpoints and the more effective he is in communicating psychiatric attitudes to non-psychiatrists, the more insistent these demands will be. As a consequence, more than one promising young psychiatrist has been destroyed as a scientist by insatiable yet valid calls on his time and energy.

H. Finally, there are a host of demands from the community in which he lives, with its awakening interest in psychiatry in their homes, for their children, in schools, courts and all community agencies. To the community the professor is the representative of psychiatry and until his department has been accepted as a part of a well-established medical school in a sophisticated community, he cannot assign to his assistants more than a certain proportion of these demands without endangering the rapport with the community and its agencies on which the smooth functioning of his clinical services will depend in part.

I. Together, these activities turn our young professor into a combination of a traveling salesman, a walking delegate and a jack-of-all-trades. Yet we still have not even mentioned the three activities which should take up more of the young professor's time than anything else:

1. If the young chief himself is not to be permanently stunted as a scientist and psychiatrist, he must have time to study.

2. He must have long, uninterrupted stretches of time in which to conduct continuous daily treatment of individual patients.

3. If psychiatry itself is not to be permanently stunted, he must both conduct and supervise research.

Perhaps this review will make it clear why, if he is to do an effective job, the investigator in psychiatry must have no duties, calls or responsibilities of any kind other than to carry on his own investigations and to supervise and correlate those of his immediate colleagues. Once he lets himself in for anything else, the floodgates will open and he will drown in a sea of conferences.

Is there any way of solving this problem? Is there any way of helping men to mature as human beings through the long years of scientific and clinical studies and guided experiences? Is there any way of allowing them time to ripen in both general and technical experience, without stunting them emotionally by over-protecting them and scientifically overburdening them? I believe that this goal is attainable, but only if we make some basic changes in our approach to the problem.

A Program

When a man progresses smoothly and without interruption through the successive steps of an academic edu-

cation without ever stepping outside the ivy-covered walls of school, college, medical school, hospital residencies of various kinds and grades and then directly to a full-time faculty appointment, he will never have had to face the challenge of psychopathology in patients and their families without unconsciously deriving his authority from one which is not his own, but which derives from the prestige of the institution he represents. He will never have had the humbling and ripening experience of being forced to take sole responsibility for the consequences of his words, actions, decisions and advice. Nor will he have had to earn his own living in the world of professional competition.

It is necessary to ask whether all the protection and security which is implied above can in reality be found in the lower ranks of academic progression. The answer to this is that the security is not there in reality, but it takes some years before the young man discovers this fact. At first everyone expects that the rate of promotion in academic life will be slow, while the ultimate test of success or failure seems very remote. The atmosphere is one of high ideals, and the earthly demands of the practical world are underplayed. Therefore, although the young scientist does not have permanent tenure and actually is engaged in intensive rivalries with his colleagues for advancement, he feels this to only a limited degree. Consequently, for some years the academic life is sheltered in many ways in which the private practitioner stands alone and exposed. (These issues have been considered fully in an article, now in press in *The American Scientist,* entitled "Some Unsolved Problems of the Scientific Career.[8])

Furthermore, in a medical school and hospital, clinical responsibilities tend to be diffused. Contacts with the patient and the patient's family are distributed among many different individuals and departments, with the result that the vital emotional relationships, both conscious and unconscious, are diluted. In all fields of medicine this makes a difference, but in none does it make as much difference as in psychiatry. Anyone who has known both the intramural and extramural types of psychiatrists will recognize the differences which tend to characterize their respective approaches to patients and their problems.

Some day it may be possible to develop a substitute for the educational experiences of private office practice; one which will be carried on under hospital and school auspices. At present, however, no such substitute exists. This is not to deny that clinical experience in a psychiatric hospital has its own unique educational value. This is an attempt, rather, to emphasize the importance of a program of training which will expose the individual to both types of experience, thus allowing cross-fertilization between the two.

Therefore, let us suppose that the sequence of the conventional steps of formal training is modified by deliberate injection of another type of experience into the smooth flow of academic years. There could be several ways of planning this; one suggestion will follow. For instance, as a promising young psychiatrist reaches the concluding steps of his formal psychiatric education he might be sent out for a limited number of years to earn his own way in private office practice. It is hard to estimate the optimal overall duration of such a period in private practice

as a component in formal training for research. The purposes are reasonably clear, but not the length of time it would take to reach them. Perhaps an enumeration of the goals is a clue to the duration:

(a) To implant a deep respect for the infinite complexities of human life and human responsibilities.

(b) To acquire familiarity with many different patients of varied types and to work through prolonged entanglements with the intricacies of their histories, their current problems and their conscious and unconscious affective attitudes both to others and to the psychiatrist. This is one of the most maturing of all psychiatric experiences, and one which can be experienced only to a very limited degree in clinical work which is confined to hospital and outpatient practice.

(c) To master all currently employed therapeutic procedures, both organic and psychological; individually and in groups; analytic and nonanalytic.

(d) For the acquisition of mature critique it is of special importance that the young psychiatrist whose goal is research should have outgrown his naive initial respect for accepted nosological and therapeutic cliches. At the same time, however, he should also have outgrown any scientifically adolescent ignorance and any tendency to blind adolescent rebellion. This is stressed because there are so many, even among our senior group, who have never outgrown this phase. They can be recognized quite easily by the fact that they talk psychiatry and analysis, but they can never absorb it when they read it or listen to it. Only that which they distill out of their own experience into words of their own choosing is meaningful to them. Their own speech carries to their ears the convincing ring of truth and reasonableness and reality; but when others say or write the same things, sometimes even in their own words, the echoed words receive an angry and impatient rejection. All students of psychoanalytic psychiatry pass through this phase. Some never emerge from it. The author has encountered it in men of professional rank, including leading analysts.

How long a period of clinical experience it takes to attain full clinical maturity, how long it takes to screen out those who can never reach this stage (not even in a lifetime of practice) and, finally, what part of this experience can be gained in hospital practice and what part of it requires the special challenge of private practice are questions of crucial importance. They will have to be studied thoughtfully and tried out empirically. Ten years of private practice does not seem far from a minimum average of requirement.

Suppose, therefore, that after the completion of their usual formal training, a group of perhaps 25 matured men who had already shown ability in both clinical and experimental hospital work were to be sent out for several years of private office practice. By the time this is completed, they would be in their mid-40's, at which ripened age they would be invited back into the academic fold, with a 10-year appointment for full-time psychiatric research. After so much varied experience, even generous financial backing would no longer endanger the processes of emotional maturation, as might earlier endowments. Men who have already fought their way through to maturity on so many fronts (personal, technical and clinical) can safely utilize modest ease

and security while they carry on their own investigations. Subsequently, during the latter part of these 10 endowed years of research, it should be possible to choose from among the original 25, now somewhere in their 50's, a few men of outstanding and diversified abilities to direct small, full-time institutes for psychiatric research.

In several fields there are precedents for such a program of advanced, postgraduate training: e.g., executives of long experience in business who are subsidized by large business organizations for advanced studies at the Harvard School of Business Administration, or the Nieman Fellowships in journalism for experienced and mature journalists. What is suggested here for psychiatrists is directly comparable.

Careful consideration must be given to the objection which will be raised against the interposition of a period of private practice as an essential component in this most advanced training. Many will say that men who are turned loose in private practice in their late 30's or early 40's will never be recaptured for full-time research.

Certainly, with rare exceptions this would have been true even a few years ago, but the objection overlooks the enormous changes in the practical financial situation which have occurred in recent years. Today these young practitioners would soon discover that as between a full-time post on the one hand (with a reasonably generous salary, plus adequate insurance, disability, and retirement income provisions), and on the other hand a self-employed private practice with no such protection, there is little financial choice. With mounting taxes he would not be better off financially even if in private practice he were to earn twice or treble the salary which a university could pay. In fact, after 10 years of struggle with present-day realities, a majority of these men would be eager to return to full-time posts. They would not be deterred from taking this step by the financial advantages of private practice because of the simple fact that these advantages no longer exist. If anyone doubts this, let him sit down and figure it out with the aid of a good tax accountant.

Furthermore, this would be particularly true of those temporary practitioners from among whom the final full-time research teams would be recruited. There would be those who voluntarily and on an unremunerated, part-time basis continued to keep their fingers in the scientific pie, devoting part of each day to hospital work, teaching and research. At considerable financial sacrifice those temporary private practitioners would struggle to find time to teach and investigate as well. They would experience to the full the taxing burdens of trying to serve so many masters. Therefore, it does not seem likely that they would be unwilling to respond if the life of pure science, adequately financed, should beckon to them again.

Nevertheless, those medical statesmen who will ultimately decide these issues may reach the conclusion that it would be dangerous to allow promising young men ever to get away from full-time medicine, fearing too few of them would return. If so, they will have to turn their attentions to an unsolved problem. They will have to make a detailed analysis of the many differences between private psychiatric practice and institutional psychiatry, whether in a state hospital or in the most modern neurosis treatment center. If the men

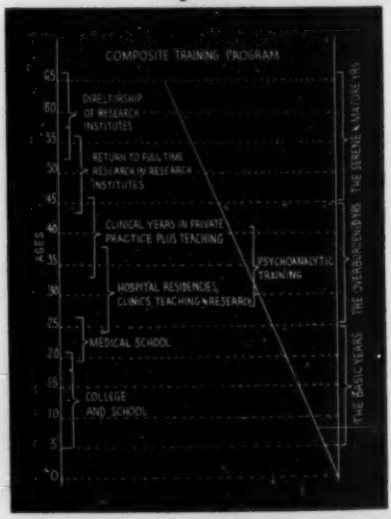
who are to be charged with leadership in psychiatric research are not to be trusted outside of the academic corral at any point in their training, serious study will have to be given to the problem of how to expose them to those experiences that are missing from a training program which is confined to academic settings.

The importance of this as an educational problem will be realized fully only by those who have themselves spent some years in both types of psychiatric practice. A preliminary exploration of the problem was undertaken in 1952 at an informal joint conference of the staffs of the department of psychiatry of the Yale School of Medicine and the Austen Riggs Center for the Study and Treatment of the Psychoneuroses.

A quick calculation will make it evident that, according to the program which has been outlined, the men who are chosen to direct these small research units necessarily will be much older than those who have been appointed to such posts in the past. Even with the increased longevity we now enjoy and can anticipate for the future, this has its dangers. No one has yet shown what age men can reach without loss of creative imagination.

Let us consider, therefore, what the balancing advantages would be. In the first place, such a director would have had the experience of successful work in the clinic and in research. Furthermore, he will have achieved emotional maturity as a human being. Out of true maturity and proved scientific competence will come the inner security which will give him freedom from envy. This mellowing process does not come automatically to everyone, but only to those few who have had the fortune to resolve their neurotic anxieties as the years go by, whether spontaneously or with technical help. The younger scientist who is still intent on his own investigations and who is still insecure about his career cannot read or think or hear anything that is not directly relevant to the problems in which he is absorbed. Anything that is not directly related to his central interests cannot penetrate into the inner sanctuary of his mind. Consequently, the young investigator who is intent on his own researches is usually an unsatisfactory assayer of the interests and abilities of other men. It is only after a man has reached true scientific and human maturity that his mind and his heart can open up ideally to new ideas, new interests, new techniques. He feels enriched rather than threatened by the zeal of younger men. He can listen and think about their work as freely as about his own. This quality in a director requires the maturity which age makes possible yet never assures. Therefore, it can be found only by careful selection from among men

Figure 1



who have passed through many stages of training, through several kinds of ripening experimental and clinical experience and through various alternative forms of spontaneous or guided psychotherapy—all of which combine to produce the men whom we need. This complex training program is diagrammed in Figure 1 (see page 24).

The Need for Small Full-Time Research Institutes

A small research institute, which is organized as an annex to an active psychiatric service, can use the latter as a reservoir of clinical material for its investigations. This is one of the many obvious economies and advantages of setting up the research unit as a more or less autonomous annex to an existing psychiatric institution, which carries the main load of teaching, therapy and diagnosis.

There have been several examples of this. Perhaps the first, nearly 35 years ago, was William Alanson White's plan of organization within St. Elizabeth's Hospital. Something similar also has existed at the Worcester State Hospital. The organization of an autonomous research annex was urged on G. Canby Robinson and George Amsden when the Payne Whitney Clinic was first organized; and again on the late Lewis Weed when a reorganization was briefly contemplated at the Henry Phipps Psychiatric Clinic. Nowhere, however, has there been a psychiatric research institute adequately financed and adequately staffed with personnel of full maturity. In planning for the future it will be worthwhile to study these earlier experiences carefully to discover why they have not been more productive.

In deciding between the research annex and the wholly independent research institute, it will be of special importance not to underestimate the destructive influence of jealousy. Those who carry the burdens of heavy, unspectacular, routine responsibilities often become quite openly envious of those who graze in the greener pastures of pure research. The destructive influence of such jealousy can take many subtle forms, against which it is not easy to provide ahead of time, even if they are anticipated and foreseen in detail. This is likely to become especially acute whenever a new department head takes over. He may quite naturally become jealous for the prestige of his new department if it is to be overshadowed scientifically by a research group.

Perhaps the only sure protection for a full-time research institute is its absolute independence and autonomy. It will be difficult to decide which price is the lesser: the price paid by the completely unattached unit with its higher operating costs and its relative scientific isolation, or alternatively the risks run by the research annex of unconscious sabotage.

Whether set up as independent institutes or as annexes, such research institutes should maintain close liaison with every other type of broad, scientific endeavor. One model to keep in mind is furnished by the many diverse departments housed under one roof at the Rockefeller Institute and Hospital. Another would be the relationship of the Institute of Advanced Studies at Princeton to Princeton University as a whole.

Furthermore, whether they are set up as independent organizations or as small, autonomous annexes to larger psychiatric hospitals, research institutes must be so organized that the investigators would be free of

every other type of duty. The following points should be considered:

(1) The staff would be free of administrative duties.

(2) They would not be burdened by committees and conferences.

(3) It is especially important that they not be required to carry on routine elementary teaching. That they would train their own advanced assistants is understood, but in elementary teaching the homage of immature minds induces fantasies of omniscience in the teacher and develops illusions about the ripeness of his judgment, as he teaches secondhand clinical lore to students who assume that their teachers have personally tested every statement. This is the quicksand into which apt teachers are often drawn.

(4) Since these men already would have had an opportunity to become experienced in therapy, they would not be required to provide routine therapeutic services lest they become swamped in demands for help and lose their objectivity by developing a special interest in some one therapeutic procedure. Yet their experience in therapy would have been sufficient to give them adequate critique in their researches on psychotherapeutic processes.

Under such conditions as these outlined above, mature men could be free to pursue their researches to unanticipated and unpredicted goals. In the course of a few years, such a program as this should start to yield successive generations of psychiatric investigators who would be clinically, experimentally and psychologically free and mature.

It seems logical that a few small institutes, organized along such lines as these and manned by a staff which has been matured in some such way as this, would achieve more fundamental progress in psychiatry than could be achieved by a thousand young psychiatrists scattered among small departments of psychiatry in medical schools, each so inadequately staffed, so inadequately matured, so inadequately housed, so inadequately financed and so overburdened that the staff must struggle merely to keep up with its many routine duties, while attempting at the same time to do some hasty research.

It is obvious that any such plan as this implies radical policy changes in medical schools; changes which are made possible and even imperative by our increasing longevity. Although the processes of education and maturation take longer in psychiatry than in any other field of science, the span of man's healthy, effective and productive life is also lasting longer. Consequently, it has become sound to gamble on the health of the scientist by endowing psychiatrists for longer years and by appointing to positions of leadership men who are older and more mature than would have been reasonable even a few years ago: men in their late 40's and early 50's. Similarly, it is possible today to choose the scientists for psychiatric research from among men who are old enough to have lived, to have been fully trained, and to have had long experience in treating sick people in community agencies, in private practice and in hospitals, as well as in research. For psychiatric research as for psychiatric therapy nothing can substitute for maturity.

This general plan also may imply a policy change on the part of foundations that is quite as radical as that which the plan implies for medical schools or for my hypothetical research institutes. It challenges the universities and research institutes to

gamble on healthy longevity in appointing to posts of leadership men of older years and greater maturity than has been their custom in the past. It also challenges those great foundations and federal and state agencies, which are concerned with psychiatry and the behavioral sciences in general, to pool enough of their resources to make it possible to achieve goals which they hold in common yet cannot finance (or at any rate have not financed) individually. There is no foundation whose charter condemns it to eternal isolationism. Therefore, with enlightened boards it should not be impossible for them to merge some of their funds with one another and with federal and state grants for research. To finance this ambitious program in selected university centers throughout the country would require some such coordinated action.

Conclusions

In psychiatric research the critical limitation is the fact that most research is being carried on by men who are humanly, scientifically, and psychiatrically immature, or by older men who have never lost their amateur standing, or in the left-over fragments of time of men who are overburdened by administrative, educational, and therapeutic responsibilities. Some are professionally sophisticated in one field, some in another, but for the research band as a whole there are few mature players and no mature conductors. This is the manpower problem which must be solved if we are to bring psychiatric research up to the level which it must attain. One possible approach toward a solution has been suggested here.

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Ratio of Applicants to Population

1952-1953

JOHN M. STALNAKER and SARAH COUNTS

BECAUSE OF THE interest in the ratio of medical school applicants to the population of the states as reported by Dr. Davenport,[2] a similar study has been made based on the 1952-53 applicant figures.

The basic data for this report were obtained from the 1952 applicant study,[3] the 1950 AMA *Directory*,[1] 1950 census[4] and the records maintained by the AAMC.

Table 1 gives a summary of the data by states. The first four columns give the availability of medical education in each state. Sixteen states have no state or municipal medical school. Ten of these states offer no medical education. Their residents must obtain their education outside of the state if they wish to become physicians. New Jersey is such a state, and one which has a large population, comparative wealth, many hospitals and superior educational facilities. Nevada is another state without a medical school, but it has a small population and no heavy concentration of population.

The freshman places available in medical schools within a state range from zero in the 10 states having no medical schools to 38 per 100,000

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TABLE I

Medical School Applicants and Freshman Places Available per State Population, 1952-53

	1 No. of Medical Schools	2 Freshmen per 100,000 Pop.	3 Freshmen from same state per 100,000 Pop.	4 Per Cent from same state	5 Applicants per 100,000 Pop.	6 Accepted per 100,000 Pop.	7 Per Cent Accepted	8 MD's per 10,000 Pop.
Alabama	1	3	3	100	10	4	46	7
*Arizona	—	—	—	—	7	3	47	11
Arkansas	1	5	5	99	10	6	57	9
California	5	3	2	78	10	4	37	16
Colorado	1	6	5	85	12	6	52	16

	1 No. of Medical Schools	2 Freshmen per 100,000 Pop.	3 Freshmen from same state per 100,000 Pop.	4 Per Cent from same state	5 Applicants per 100,000 Pop.	6 Accepted per 100,000 Pop.	7 Per Cent Accepted	8 MD's per 10,000 Pop.
*Connecticut	1	4	1	15	15	5	31	16
*Delaware	—	—	—	—	12	5	39	13
*D. of Columbia	3	38	4	12	19	6	31	31
*Florida	1	1	1	100	12	5	41	11
Georgia	2	4	3	76	7	5	64	9
*Idaho	—	—	—	—	9	5	56	8
Illinois	5	6	3	54	9	4	46	15
Indiana	1	4	4	96	8	5	58	11
Iowa	1	5	4	93	7	5	74	11
Kansas	1	6	6	88	12	6	53	11
Kentucky	1	3	3	86	7	4	58	9
Louisiana	2	10	5	55	9	6	71	11
*Maine	—	—	—	—	5	2	43	11
Maryland	2	8	3	47	9	5	53	15
*Massachusetts	3	7	3	43	11	5	42	19
Michigan	2	4	4	92	9	5	57	11
Minnesota	1	4	4	96	9	6	62	14
Mississippi	1	3	3	100	10	5	55	7
Missouri	3	7	2	38	6	3	53	13
*Montana	—	—	—	—	9	4	42	9
Nebraska	2	12	8	65	17	9	54	12
*Nevada	—	—	—	—	4	1	33	12
*New Hampshire	1	5	0	04	6	4	56	14
*New Jersey	—	—	—	—	16	6	37	13
*New Mexico	—	—	—	—	4	2	60	7
New York	9	6	4	73	18	7	37	20
North Carolina	3	5	3	61	7	4	52	8
North Dakota	1	6	5	85	10	7	72	8
Ohio	3	4	4	88	10	5	51	12
Oklahoma	1	4	4	100	10	5	55	10
Oregon	1	5	4	76	9	5	50	12
*Pennsylvania	6	7	5	69	14	6	39	14
*Rhode Island	—	—	—	—	13	5	39	13
South Carolina	1	4	4	100	7	5	67	7
South Dakota	1	5	4	87	9	7	72	8
Tennessee	3	9	5	53	8	6	71	9
Texas	3	5	4	95	8	5	64	10
Utah	1	8	7	86	17	9	55	12
Vermont	1	13	4	29	9	5	61	15
Virginia	2	5	4	81	8	5	57	10
Washington	1	3	3	89	11	5	45	11
West Virginia	1	2	2	100	8	3	41	9
Wisconsin	2	5	4	74	8	5	60	11
*Wyoming	—	—	—	—	10	5	52	8
Average or Total	81	5	3	69	11	5	47	13

*No state or municipal medical school.

TABLE 2

States Tabulated According to Per Cent of Accepted Applicants and Type of Medical Schools in the State

Type of Medical School in State	31% to 41%	42% to 52%	53% to 59%	60% to 74%	Total
Government and private	2*	3	3	5	13
Government only	1	4	9	6	20
Private only	4	1	1	0	6
No medical school	4	4	1	1	10
Total number of states	11	12	14	12	49

*Two states have from 31 per cent to 41 per cent of their applicants to medical school accepted, and these two states each have both government and private medical schools.

in the District of Columbia. Vermont, a state of small population, has a ratio of 13 places in its freshman medical classes per 100,000 population, and Nebraska with its two medical schools, offers 12 places per 100,000 of its population. New York, although it has nine medical schools, still has only six freshman places per 100,000 population. It should be remembered, of course, that residents may apply to and be accepted by medical schools outside their home state, and that all independent and some state-controlled medical schools accept some out-of-state applicants.

A comparison of these data with those reported in the earlier study[2] shows that the individual states maintain approximately their same positions relative to each other. There is an overall decrease in the number of applicants amounting to about two per 100,000 population for the country as a whole. The largest proportional applicant decreases are for Nevada and Vermont. Only Wyoming increased. Alabama, Arkansas, Delaware and Oklahoma held to their earlier level in contrast to the general national decrease.

It will be noted that the applicants from states having medical education available tend to be accepted in greater proportion than are the applicants of states not supporting medical education. Table 2 summarizes the success of the applicants of the various states according to whether the state supports public or

TABLE 3

States Tabulated According to Applicants per 100,000 Population and Freshmen per 100,000 Population

Freshmen Places Available in States per 100,000 Population	Applicants per 100,000 Population 4 - 7	8 - 9	10 - 11	12 - 19	Total
7 - 38	1*	4	1	4	10
5 - 6	3	6	2	3	14
1 - 4	3	4	6	2	15
None	4	2	1	3	10
Total number of states	11	16	10	12	49

*One state has 4 to 7 applicants per 100,000 population and has from 7 to 38 places available in the freshman class of medical schools.

private medical education. From this table, it may be noted that 11 states have less than 42 per cent of their applicants accepted by any medical school. At the other extreme, there are 12 states which have at least 60 per cent of their applicants accepted. The national average in 1952 was 47 per cent. Only two of the 13 states which have both public and private medical schools have 41 per cent or less of their applicants accepted, whereas eight of these 13 states have 53 per cent or more of their applicants accepted.

medical education to be related to the relative numbers applying, the relationship is not significant.

There is a definite relationship between the relative number of doctors in a state and the relative number of students who seek to enter medical training from that state. This relationship is shown in Table 4. There is a possibility that the same factors—economic, educational, cultural—which attract doctors also stimulate students to become doctors, and thus in a location where more doctors are found, more young men

TABLE 4

States Tabulated According to Applicants per 100,000 Population and MD's per 10,000 Population

MD's per 10,000 Population	Applicants per 100,000 Population 4-7	8-9	10-11	12-19	Total
14-31	1	4	2	5*	12
12-13	2	1	1	5	9
10-11	3	6	2	2	13
7-9	5	5	5	0	15
Total number of states	11	16	10	12	49

*Five states have 12-19 applicants to medical school per 100,000 population and these 5 states also have 14-31 MD's per 10,000 population.

Is a greater proportion of the population interested in seeking a medical education in those states in which medical education is the most readily available? Table 3 gives data on which an answer to this question may be based. From Table 3, it can be observed that of the 12 states having 12 or more applicants per 100,000 population, seven are states in which medical education is more available relative to the population of the state than for the five other states having the same relative proportion of their population apply. Although there is a very slight tendency for the relative availability of

are interested in becoming doctors.

Summary

1. The basic data for 1952-53 showing availability of medical training, the ratio of applicants and accepted applicants to the population and the degree of success of applicants in gaining acceptance to medical school are presented.

2. The data are similar to those for 1951-52 and suggest that the interstate variations are relatively stable.

3. The proportion of applicants accepted has a positive relationship

with the ratio of freshmen to the population. Also, those states having a government-supported school tend to have a higher proportion of applicants accepted than other states.

4. There is a slight positive relationship between the ratio of freshmen to the population and the ratio of applicants to the population. These measures are interpreted to reflect availability of medical training and interest in obtaining medical training, respectively.

5. There is a positive relationship between the ratio of doctors to the population and the ratio of applicants to the population. It is suggested that this relationship results from common economic, educational and cultural factors.

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A Matching Plan for Admissions to Medical Schools

JOHN A. D. COOPER and HAROLD A. DAVENPORT

THE SUCCESS OF the intern matching program suggests strongly that a similar plan could be applied to the process of selecting candidates for admission to medical school.

In one respect, a procedure designed to enable both the student applicant and the medical school to achieve optimum conditions of mutual preference would be less complex than the intern matching program because there are fewer medical schools than hospitals. The larger number of applicants to medical schools would offer no serious problems of operation of the matching principle and the present procedures for selection of medical classes would not be altered unfavorably. The students would remain free to apply where they wished, and medical schools would retain their prerogatives of selection. The plan would allow all applications under consideration by the schools to be received before a final evaluation of individual candidates was made. It would allow the candidates freedom of expressing their order of choice of schools with the assurance that such choices would be confidential and considered in their respective order.

As the plan is conceived, students would be permitted to file applications for admission until a deadline date; for example, March 1 of the year in which they desired a place. The medical schools would have the privilege at any time of rejecting applicants who were unqualified for admission by their normal standards. The extent to which a school exercised the rejection privilege would depend largely on the ratio of applications received to the size of its entering class. Schools receiving a large number of applications would be able to limit the list used for making a final selection in their customary manner.

An interval of two months would follow completion of all applications, action by committees on admission and classification of applicants according to the school's preference. A list of the applicants arranged in order of preference would then be sent to the central office of the Association of American Medical Colleges.

During the time preceding a deadline date (May 1), each applicant would be required to supply the cen-

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tral office with a list of all medical schools to which he had applied, with his order of preference indicated. A card for each applicant would then be made by the central office and the matching process accomplished in the same manner as that used for interns and hospitals.

Objectives

The objectives of the plan can be listed in terms of advantages to applicants and advantages to schools. The following points apply to students:

1. The interval during which applications could be filed would become uniform for all schools.
2. A definite date would be established for the notification of accepted candidates and thereby eliminate the present extended period of uncertainty for many applicants.
3. It would avoid the loss of deposit money made to insure a place at a school that is not the first choice, when the candidate is later accepted by his first-choice school.
4. A date would be provided on which Selective Service commitments might be reckoned by draft boards.
5. It would favor securing admission to the school of first choice.

Advantages to the medical schools may be expected to accrue through the following features:

1. Committees on admission could study all applications before making decisions.
2. A relatively late date for the completion of selections would allow more time for interviewing candidates and obtaining other pertinent information about them without penalty of loss of candidates to schools giving earlier acceptances.
3. Withdrawals after the entering class had been selected would be greatly minimized.
4. Serial reporting of accepted candidates by the Association would be replaced by the single report of the results of matching.
5. The plan would allow each school to secure the students ranked highest and available to it.

Of concern is the effect of admission through the agency of a matching plan on state-supported medical schools. Recent studies by the Association show that students who expect to attend the tax-supported school of their state file relatively few applications elsewhere. This suggests that the competition is strong among endowed schools without geographical restrictions, but weak among those that restrict admission partially or entirely to residents. It seems unlikely that a matching procedure would alter the distribution of students desiring to attend any particular type of school because their choice would not be dependent on the method used by schools in selecting students.

Other questions that pertain to the workability of a student's matching plan are the manner of handling in-state or other *distributions* and *multiple admission* dates. Neither presents a serious obstacle. Distributions can be handled by means of separate lists submitted to the Association office by the school, with a designation of the percentage or ratio desired for each group of candidates. The applicants would not be required to make any special designation on their list since they could be matched only with the proper list submitted by the medical school. Schools with multiple admission dates need not be excluded from the plan. Separate lists for each admission date could be prepared for matching, and if necessary, supplemented by the admission of "off-season" candidates who would not

participate in the plan. Since these irregularities concern only a minority of schools, the overall success of the plan would not be affected.

Outline of Dates

Dates pertaining to the handling of applications would require determination. The following outline is suggested:

1. Opening date for the receipt of applications for entry in the succeeding year. This might be May 1, 1954, for candidates seeking enrollment in the autumn of 1955, or it might be later, say September 1. The success of the plan would not be affected if all schools did not have the same date, but a unified date might be desirable to facilitate publicizing the plan.

2. Closing date for the receipt of applications. This might be March 1 of the year of entry. It necessarily would be the same for all schools to permit uniformity of opportunity for all applicants.

3. Final date for the submission of rank lists made up by the schools and submitted to the central office. This date also would be the same for all schools to permit prompt execution of the matching procedure. May 1, which would allow committees two months to complete their work on applications, is suggested. Experience might show that a shorter time would be possible, since there would be many applications that would be completed considerably earlier than the closing date.

4. Date on which the Association would return the lists of matched and accepted applicants to the schools. If this date were June 1 and if the applicants were notified of their acceptance promptly by the schools, the schedule would fit present needs for military purposes and allow arrangements for deferment to be made with draft boards. Were it not necessary to anticipate the military status of many students, the entire schedule for handling applications could be placed farther into the year if the consensus of medical school administrators favored a later schedule.

Details of Placement

Certain details concerned with preparing the list of applicants in order of their desirability by a school merit consideration. Suppose that a school will accept 100 candidates. The first 100 listed would not need to be placed in any special order because each candidate of this group would be a first choice. After the first 100, each candidate might be considered as an alternate, and should be listed in order: 101, 102, 103 and so on. A school would have the privilege of listing all remaining applicants on this basis or it might limit the number to enough to be certain to fill its class. Just what this number would be could be predicted on the basis of past experience. Suppose that in preceding years it had been necessary to offer 225 places in order to obtain 100 places accepted. Under the matching plan, the school could submit a total of 300 and be practically certain to fill its class. Of these, the last 200 would be listed in order of choice.

Schools that receive a very large number of applications might find it expedient to use some means of screening and retain only a fraction of the total number. If 1,500 were received and only 100 places could be offered, it probably would prove to be expedient to reject promptly half or two-thirds of the total and make selections from the remainder. By contrast, if a school received only 300 applications for 100 places, it

would probably make no rejections but would list the entire group. The number submitted for matching would not be limited but left to the discretion of the individual school.

The order of the student's choice of school would be the determining factor of his placement, provided that he were listed in the first-choice groups of the schools to which he had applied. If he had alternate rating with all schools, his first choice would remain operative until the class of that school became filled; then, if he became top alternate in his second-choice school before its class filled, he would be so placed. By similar order of sequence, his second, third or *nth* choice would remain active as long as there were vacancies in those schools.

The present procedures used by the medical schools in making reports to the Association on candidates who had been accepted and those who had withdrawn from the class would be replaced by a single listing of students in order of their desirability. For statistical purposes it probably would be necessary for the schools to make a supplementary report of the applicants who had been rejected, but the Association would be relieved of the necessity of serial reporting of accepted candidates, which is done currently, and would make only a single report of the results of the matching plan. A list of applicants who had not been matched with any medical school could be furnished for use by the schools in the event that withdrawals from the classes occurred before the beginning of the school term.

In case the plan were put into operation, it would need to be given proper publicity in colleges and universities engaged in premedical training. This could be handled through the Association by circularizing premedical advisors, and through the offices of admission of the medical schools by a leaflet of information sent to students with the application blank.

The success of the plan would necessitate agreements by both applicants and medical schools to accept the results of the matching procedure. The student's agreement could be incorporated conveniently into the form on which he submitted his list of schools in order of preference. Agreement by the medical school would be inherent in the mechanism of the plan, and it would entail nothing beyond the acceptance of applicants already indicated as acceptable.

Medical Student Attitudes Toward Behavior Disorders

GEORGE SASLOW and IVAN N. MENSH

THE COMPLEX FACTORS in the teaching process present difficulties in its evaluation. The complexity also has resulted in a variety of techniques[7] designed to study the effectiveness of teaching. For example, achievement tests based upon acquisition of course content have been used widely, as in a recent study of medical student knowledge of cancer.[1] Awareness of the need for studying effects of medical education also has been demonstrated in the support given by the Commonwealth Fund to research programs for evaluative procedures.[11]

Because of the significance of attitudes in the understanding of behavior, their study has been the basis for research in many fields. Various techniques for evaluating attitudes have been applied extensively in education, the military services, public opinion and other areas of psychological investigation.

The present study was designed to evaluate attitudes in medical education, using an indirect measure because of the "greater freedom from dependence upon the respondent's voluntary self-description," as suggested by Campbell.[3] His "general formula" was followed in developing the attitude scale used in our study—"A plausible task, (a) which your respondents will all strive to do well, (b) which is sufficiently difficult or ambiguous to allow individual differences in response and (c) which can be loaded with content relative to the attitude you seek to measure."

The experimental design of our study embraces a long-range program of following systematically the attitudes of medical students toward behavior disorders. As freshmen they bring with them the attitudes developed before entrance into medical school, and at the end of their first week the first administration of a scale of attitudes toward behavior disorders is carried out. At the beginning of a course in comprehensive medicine, called "The Pathology of Behavior," in their sophomore year, the scale is administered again, and at the end of the course, 18 weeks later, a third time. The course is part of the sophomores' introduction to clinical medicine.

The specific goal of this study is to evaluate the immediate effects of the sophomore course in comprehen-

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sive medicine upon the attitudes of medical students toward behavior disorders, and this specific purpose is incorporated into a long-range study of these attitudes. In the overall study, other groups of students who do and who do not take the sophomore course as part of their training are sampled. These include students of occupational therapy, physical therapy, dentistry, social work, hospital administration and postgraduate nursing. Other samples also are available—first-year psychiatric residents, and junior and senior medical students choosing to work in a clinic for comprehensive medicine as an elective. In this design, then, the aggregate of samples may provide some understanding of the differential attitudes toward behavior disorders among students in the various schools, measure the immediate effects of a specific course and follow the course of these attitudes over the four years of training of medical students.

Method of Attitude Evaluation

As is frequently found in research, once the threshold of an idea has been passed, several independent studies are initiated. Later this phenomenon is made apparent by communication of the research design, data or conclusion. Thus, in addition to the studies reported above, [1, 11] Hathaway and Schofield at the University of Minnesota Medical School also have been concerned with the problem of evaluating student attitudes in courses in psychiatry, and have developed a 37-item scale for this purpose. They permitted us to try their scale in our sampling of medical students and we adapted 20 of the 37 items for our use.

In addition to the 20 items of the Minnesota scale, 60 other items were designed to tap attitudes toward behavior disorders, and these 80 items were tried out on a group of senior medical students who were working in a clinic for comprehensive medicine as an elective because of their interest in the field. After successive revisions based upon item discriminations, our total scale consisted of 20 items drawn from the Hathaway-Schofield study, eight from the Sanford-Older scale,[8] and 40 items prepared by us from the course content of lectures, book[2] and references.[5, 9, 10] One of the authors (G.S.) was in charge of the course and utilized the same reading and lecture materials for the three years of the study reported here.

The students were given standard instructions. Three degrees of agreement and three of disagreement were permitted: strongly agree, agree and somewhat agree, somewhat disagree, disagree and strongly disagree—and each item was scaled from 1 to 6, with 6 indicating the most favorable attitude toward behavior disorders.*

Results

Table I summarizes the attitude scale data from the sampling studied. Reliability of the scale by the odd-even method[4] was .87. The total score could range theoretically from 0 to 338; among the student respondents the range was 111-305. Although the psychiatric residents and students of social work, postgraduate nursing and hospital administration averaged five years older than students in the other schools, there were no significant correlations between age and score (r's=.04—.14) among the respondents studied. Similarly, analysis of the data[6] indicated no signifi-

*Interested persons may obtain a copy of the attitude scale with directions for scoring by writing to the authors.

TABLE I.

Attitude Scale Data

Sample (N=21)	Age		N(total=921)	Total score[a]		
			A.			
1950-51[f]	M	Sigma		M	Sigma	
Psychiat. resid.[e]	27.50	2.18	8	267.25	27.39	
Soc. work	28.97	6.78	35	252.83	20.68	
Med. soph.	23.82	1.85	78	242.01	26.23	
			78	270.37[b]	14.13	.43
Postgrad. nurs.	30.58	7.57	39	235.64	31.55	
			39	259.89[b]	23.27	.86
Occup. therap. juniors	22.57	10.95	8	234.62	26.75	
			8	256.71[b]	20.86	.86
Med. fresh.	22.12	2.93	89	220.06	31.54	
Hosp. admin.	29.27	5.70	15	209.47	34.00	
1951-52						
Psychiat. resid.[e]	27.78	4.32	9	272.67	15.80	
Junior and senior med. stud. electing comprehensive medicine[e]	23.12	1.05	15	269.01	17.10	
Med. soph.[c]	23.59	1.18	78	260.70	19.08	
			78	269.82[b]	17.92	.63
Occup. therap. junior and senior	22.62	4.74	9	252.00	20.33	
			9	267.28[b]	11.86	.97
Med. fresh.	21.56	3.31	69	248.90	19.85	
Postgrad. nurs.	31.97	8.23	12	245.00	22.82	
			12	262.00[b]	23.87	.82
Hosp. admin.	28.00	4.00	5	239.80	15.88	
Dental fresh.	22.76	3.25	34	233.56	16.57	
1952-53						
Med. fresh.	21.96	2.16	82	243.06	20.30	
Dental fresh.	23.68	3.60	28	231.28	17.64	
Dental soph.[d]	23.45	2.76	49	239.88	17.42	.75
			B.			
1952-53						
Phys. therapy fresh.	27.71	3.71	14	235.57	13.78	
				228.14[g]	14.92	.81
Occup. therapy fresh.	20.17	2.15	12	240.83	14.90	
				239.75[g]	15.34	.45
Occup. therap. seniors	25.96	7.57	24	246.79	14.00	
				250.75[h]	18.00	.88

[a]total score possible=338.
[b]performance following class in comprehensive medicine (the sophomore course).
[c]this sample was the med. fresh. class of '50-51. r=.60 between scores as freshman and as sophomore students.
[d]this sample was the dental fresh. class of '51-52. r=.75 between scores as freshman and as sophomore students.
[e]criterion samples.
[f]The form of the attitude survey used in 1950-51 was the first revision following the initial experimental try-out. The forms used in 1951-52 and 1952-53 contain the same items as in the 1950-51 form but forced-choice was instituted and students were not permitted a "don't know" response.
[g]performance following 16 weeks' class in "Problems of Personality Functioning," taught by another instructor, Dr. A.
[h]performance following 16 weeks' class in "Clinical Psychiatry" taught by Dr. A.

cant sex differences (obtained t=.34; t=1.96 for P-value of .05), though it may be hypothesized that at least the two Sanford-Older items on authoritarianism and equalitarianism (A-E) which point toward equality of sexes would be differentially responded to according to sex of respondent. Thus, neither age nor sex appeared a significant factor in the data.

The psychiatric resident samples may be thought of as criterion groups, in that they consisted of residents entering their first year of psychiatry, which would be at the peak of their motivation and favorable attitude toward their chosen specialty.

This was indicated by the empirical data of Table I, with the residents scoring significantly higher than the other groups. A second criterion sampling was the junior and senior medical students who had chosen to work in a clinic for comprehensive medicine[9] as an elective course. This criterion sampling scored at a level comparable with that of the psychiatric residents, consistent with our hypothesis.

The only other sampling which approximated the residents' and elective students' degree of favorable attitude were those which had completed the sophomore course (compare in Table I each score marked[b] with the score on the line just above). Their precourse scores were significantly below those of the residents and elective students. It is to be noted also that the relative scores of the samplings decrease as contact with the medical school environment is less. Thus, beginning medical, dental and hospital administration students reflect less favorable attitudes toward behavior disorders than do other professional students; i.e., graduate social work and nursing students, and second-year medical and occupational therapy students, whose level of training already has involved them in the medical setting. These data show that our experimental attitude study indicates not only the effects of the sophomore course but also "normal" changes as a function of duration of exposure to medical problems.

Of interest are the data from the dental students, who are neither in direct contact with medical problems nor in the sophomore course. Their scores also increase significantly (P=.01) in their favorable attitude toward behavior disorders as they move from freshman to sophomore dental year. However, their relative rank among the several samplings does not change significantly, so that the hypothesis of decreasing score with decreasing contact with the medical setting continues to appear tenable.

The sampling of medical students in the sophomore year who had the course in comprehensive medicine, which was the specific focus of the present study, showed a much greater range of variability in the before-after scores than did the other student samplings of nurses and occupational therapists. Table I reports, for the former, correlations of .43-.63 between the attitude scale scores before the course and those after completion of the course. These r's are significantly less than those of .82-.97 for the nursing and O.T. students; there is conspicuously greater homogeneity of attitudes among the latter samplings. That is, although all samplings scored more favorable attitudes toward behavior disorders after the course, the medical students were noticeably less consistent than the other students. Some medical students shifted their attitudes considerably, others little or not at all. The relative positions of the individual medical students changed significantly so that only a .43-.63 correlation was found between scores pre- and post-course. In contrast, the other professional students were more consistent, with r's of .82-.97 between pre- and post-course scores, indicating that the increase in favorable attitude was quite uniform among these samples, unlike the heterogeneity in change of attitudes of the medical students.

Not only were there significant mean differences among the samplings, but there were also significant differences in terms of variability,

reflected in the sigma values shown in Table I. The sophomore course resulted in a more restricted range of scores, with higher mean scores and reduced scatter. For example, a mean of 242.01 with sigma of 26.23 was scored by the 1950-51 sophomores before the sophomore course, and 270.37 with sigma of 14.13, respectively, after the course. This reduced variability suggests more uniform thinking among the student samples following the course. The planned follow-up of the students through their four years of medical school should yield further data on the consistency of their attitudes toward behavior disorders, as reflected in our experimental scale.

In examining the data of Table I, the influences of age, sex and scores on the Sanford-Older authoritarian-equalitarian scale were found not to affect significantly the attitude scores of the students. Another variable which was considered was that of grade attained in the sophomore course. If the attitude scale was measuring proficiency and achievement in the course, a high correlation should exist between grade and attitude score. For the two years of study and completed to date the correlations were —.14 and —.20, neither of which is significant statistically but both indicating a negative trend; i.e., a tendency for the students with high course grades to score toward the less favorable end in attitudes toward behavior disorders.

Thus, as often demonstrated, though amount of information has relevance to attitudes, there are other significant factors which function in determining the attitudes. Further, the relationship between class rank in the course and rank in the sophomore class for all courses (i.e., general standing) was analyzed and found to be low but significantly positive (r=.28, P-value=.02). This finding suggests that the inverse relation between course grade and favorable attitude toward behavior disorders holds for general intraclass standing as well as specifically for standing in the sophomore course itself. It may mean that those students who attain highest class standing in this school show less favorable attitudes toward behavior disorders.

That higher attitude scores do not necessarily result from a student's second exposure to the scale may be seen in Part B, Table I. The scores of two groups of students who took a particular course in psychiatry (considerable emphasis on psychoanalytic concepts) with another instructor showed no significant change, and a significant decrease. Another group of students taught a different course by that instructor showed a significant increase in score. These data suggest the relevance to the attitude score changes of the manner of presentation of behavior disorders.

Summary

The experimental design and three years of data are presented from a long-range program of systematically following the attitudes of medical students toward behavior disorders. Criterion groups of psychiatric residents at the beginning of their first year of residency, and of junior and senior medical students electing work in a clinic for comprehensive medicine, at the peak of their motivation and favorable attitude toward behavior disorders, also were studied, together with samples from other professional student groups in training in a medical center (students of nursing, occupational therapy, social

work, hospital administration and dentistry). An attitude scale of 68 items was designed as the test instrument and administered to students in the various schools of the center over a three-year period, the first phase of the long-range plan.

Statistically significant changes in attitude test scores appear to be associated with experiencing the course, in any of the student groups. Medical students are much more heterogeneous in the changes they undergo than other groups in the course. Age, sex, "rigidity" and grade in the course appear to have no significant relation to the test scores.

The several types of student groups used suggest that the attitude test devised indicates the effects of duration of experience as a student in a medical center, and duration of exposure of health care personnel to medical problems, as such, as well as the effects of a particular course designed to bring about certain general changes in attitude toward behavior disorders.

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Program for the

Sixty-Fourth Annual Meeting

Monday, October 26, 1953

9:00 A.M.—*Trimble Hall*
SHORT BUSINESS MEETING
(1) Introduction of new deans
(2) Consideration of suggested revision of Constitution and By-Laws
(3) Naming of Nominating Committee

9:30 A.M. PRESIDENTIAL ADDRESS—Ward Darley

10:00 A.M. HIGHLIGHTS OF THE INSTITUTE on the Teaching of Physiology, Pharmacology and Biochemistry

12:00 noon LUNCH

2:00 P.M. ROUND TABLE DISCUSSIONS (going on simultaneously)
The Teaching of Physiology, Pharmacology and Biochemistry
Round Table A
Round Table B
Round Table C
Round Table D
Round Table E
Round Table F
Round Table G
Round Table H

7:00 P.M.—*Trimble Hall*
ANNUAL DINNER OF THE ASSOCIATION
Presentation of the Borden Award in the Medical Sciences for 1953—Ashley Weech, Chairman of the Committee on the Borden Award; W. A. Wentworth, Secretary of the Borden Company Foundation, Inc.
Address—Arthur S. Adams, President, American Council on Education

Tuesday, October 27, 1953

9:00 A.M.—*Trimble Hall*
SHORT BUSINESS MEETING
(1) Report of Nominating Committee
(2) Election of Officers for 1953-54

9:15 A.M. MEDICINE AS HUMAN BIOLOGY—Alfred Washburn, Professor of Human Growth and Development and Director, Child Research Council, University of Colorado School of Medicine

10:00 A.M. THE CHIEF FINDINGS AND RECOMMENDATIONS OF THE SURVEY OF PREMEDICAL EDUCATION—Aura Severinghaus, Columbia University; Panel: Survey Subcommittee Members.

12:00 noon LUNCH

2:00 P.M. THE CHIEF FINDINGS AND RECOMMENDATIONS OF THE SURVEY OF MEDICAL EDUCATION—John Deitrick, Jefferson Medical College; Panel: Survey Committee Members

4.00 P.M. OPEN HEARINGS ON ANNUAL REPORTS OF COMMITTEES (going on simultaneously)

1. *Audio-Visual Education*—Chairman, Walter A. Bloedorn
2. *Continuation Education*—Chairman, George N. Aagaard
3. *Environmental Medicine*—Chairman, William W. Frye
4. *Financial Aid to Medical Education*—Chairman, Vernon Lippard
5. *Graduate Medical Education*—Chairman, Kendall Corbin
6. *International Relations in Medical Education*—Chairman, Francis Scott Smyth
7. *Internships and Residencies*—Chairman, John Youmans
8. *Licensure Problems*—Chairman, Charles A. Doan
9. *Medical Care Plans*—Chairman, Henry B. Mulholland
10. *National Emergency Planning*—Chairman, Stockton Kimball
11. *Public Information*—Chairman, John L. Caughey
12. *Student Personnel Practices*—Chairman, Carlyle Jacobsen
13. *Veterans Administration — Medical School Relationships* — Chairman, R. Hugh Wood

7:00 P.M. DINNER

9:00 P.M. FILM PROGRAM — Medical Audio-Visual Institute — *Trimble Hall*

Wednesday, October 28, 1953

9:00 A.M. BUSINESS MEETING

1. Roll Call
2. Approval of Minutes of 63rd Annual Meeting
3. Report of Chairman of the Executive Council—Joseph C. Hinsey
4. Report of Secretary and Editor—Dean F. Smiley
5. Report of Treasurer—John B. Youmans
6. Report of Director of Studies—John M. Stalnaker
7. Report of Medical Audio-Visual Institute—David S. Ruhe
8. Reports of Committees:
   a) *Audio-Visual Education*
   b) *Continuation Education*
   c) *Editorial Board*
   d) *Environmental Medicine*
   e) *Financial Aid to Medical Eduation*
   f) *Graduate Medical Education*
   g) *International Relations in Medical Education*
   h) *Internships and Residencies*
   i) *Long-Range Planning*
   j) *Medical Care Plans*
   k) *National Emergency Planning*
   l) *Planning for Teaching Institutes*
   m) *Public Information*
   n) *Student Personnel Practices*
   o) *Veterans Administration—Medical School Relationships*
9. Determination of Time and Place of 65th Annual Meeting
10. Presentation of Resolutions
    (All resolutions must be presented in writing to the Secretary prior to 7:00 P.M., October 27, 1953)
11. Installation of Officers for 1953-1954

Open Meeting

An open meeting of the Committee on Continuation Education has been announced by Dr. George N. Aagaard, committee chairman. The session will be held on Sunday, October 25, from 9:30 a.m. to 12:30 p.m. at the Claridge Hotel.

Editorials and Comments

The First World Conference on Medical Education

TO THE WORLD MEDICAL ASSOCIATION which sponsored the conference, to Sir Lionel Whitby, president of the conference and chairman of the Programme Committee, to Dr. T. C. Routley, chairman of the Organizing Committee, and to Dr. T. Rowland Hill and Lady Whitby, chairman of the local Arrangement Committee, and chairman of the BMA Ladies' Committee respectively, should go a vote of thanks for a very successful First World Conference on Medical Education.

By use of the meeting facilities provided at BMA House and at Friends' House, a three-minute walk away, the four sections, one on Requirements for Entry Into Medical Schools, one on Aims and Content of the Medical Curriculum, one on Techniques and Methods of Medical Education and one on Preventive and Social Medicine, were very comfortably and efficiently taken care of. The communication and language problem was met very effectively by installing a loud-speaker system in each room. Three sets of interpreters simultaneously translated the speeches and discussions to the earphones provided all participants, who could make their choice of three languages: English, French or Spanish.

No resolutions were passed and no definite recommendations were made, but in those important areas of medical education represented by the four sections the effort was definitely made to point up the outstanding problems with which medical educators are or should be concerning themselves. General consensus as to what these chief problems are was quite generally reached though unanimity as to the specific methods to be used in solving them was neither attained nor attempted.

Among the problems recognized as urgently requiring solution were: the overcrowded curriculum, which is the result of adding the new without reorganizing the old and failing to keep steadily in mind the basic objectives of laying the foundation of a doctor's training and establishing enduring habits of thought, study and self-education; increasing specialization resulting in fragmentary instruction and loss of the holistic concept of man and his many-sided problems; lack of balance between research and teaching, oftimes to the detriment of the latter; the failure of many clinical teachers to keep step with the changing nomenclature in the basic sciences; the tendency to overstress disease as an entity and understress disease as deviation from the normal; failure to develop in the student an adequate sense of responsibility to the individual patient and to the community.

In addition to the many papers and prepared discussions of the conference, ample provisions were made for the showing of new medical-teaching films each noontime at the Wellcome Institutions, one minute's

walking time from Friends' House; for visits to medical schools, hospitals and clinics in and around London; for a one-day excursion to Cambridge and an excursion down the River Thames, to say nothing of the opportunities to meet socially the local dignitaries and other participants of the conference at the six receptions and the conference banquet.

Arrangements have been made for prompt publication of the proceedings of the conference by the Oxford University Press, under the general editorship of Dr. Hugh Clegg, secretary of the Programme Committee and editor of the *British Medical Journal*. To those in medical education who were not fortunate enough to be among the 600 participating in the conference, it should be pointed out that these proceedings will be well worth the cost if they do nothing more than make available Professor Sir Lionel Whitby's presidential address, "The Challenge To Medical Education In The Second Half of The Twentieth Century"; Sir Richard Livingstone's paper, "What Is Education?"; Professor Sir Henry Cohen's paper, "The Balanced Curriculum," and the final reports of the leaders and rapporteurs of the four sections.

How Many Departments?

THERE ARE certain advantages that accrue to a subject field in the medical college curriculum when it is given full departmental status. It is given a department head who represents it on the faculty council, its teaching and research program have the undivided attention of its whole staff, and staff recruitment is commonly made easier. With these advantages in view it is easy to see why the number of departments has multiplied rapidly in some schools.

When the school's organization as a whole is viewed, however, it becomes immediately evident that excessive numbers of departments carry with them certain hazards and disadvantages. The faculty council becomes too large and unwieldy; the large number of clinical departments tends to submerge the limited number of preclinical departments; correlation between related fields tends to suffer.

The general experience of the schools has shown the wisdom of limiting the total number of departments to about seven preclinical and seven clinical departments, and providing for the other subject fields through combining them with or attaching them to the 14 autonomous departments.

In the effort to maintain this simple yet balanced organizational structure, a number of problems arise:

To what department should biophysics be attached or should it be given departmental status?

Is it wise to combine physiology and pharmacology in one department?

Should physical diagnosis be an independent department?

Does physical medicine and rehabilitation require separate departmental status?

Should radiology have independent status?

Is there a place for a department of general practice?

Each individual school has to answer these questions with due consideration to the breadth of interest and administrative ability of its various department heads and with regard for a wide variety of local conditions. The present trend, however, would appear to be toward establishing independent departments of biophysics, toward making separate departments of physiology and pharmacology, toward attaching physical diagnosis to medicine (but calling upon other clinical departments to contribute to the teaching), toward giving physical medicine and rehabilitation departmental status, toward establishing radiology and radiation therapy as a separate department. The plea for setting up independent departments of general practice has met with little sympathy in most of our schools.

Whatever the organizational structure, two principles are generally accepted: (1) the number of independent departments should be limited, and (2) the number of clinical and preclinical departments should be kept in proper balance.

NEWS DIGEST

Enrollment

This year's entering class enrollment in the medical schools showed a slight decrease for the first time in five years. Some 7,425 started medical school this fall, 16 less than in the 1952-53 class. Last year's enrollment had set a new record.

The 53rd annual report on medical education, prepared by the Council on Medical Education and Hospitals of the AMA, suggests that this leveling off reflects an adjustment to operation of the schools at or near their maximum capacity.

Significant increases in enrollments are anticipated when expansion programs now in progress at many schools are completed.

The report revealed the burden medical faculties must assume in addition to regular programs for undergraduate medical students. A total of 50,445 other students received instruction from medical schools during 1952-53.

Physician Draft

It is not anticipated that there will be additional calls for physicians during the next 12 months. The increased number of volunteers plus those which were called up in August has provided a sufficient number of physicians for the armed forces. Some few of those on the reserve list will be called from time to time. It should be possible for those in essential positions as residents, teachers and research workers to remain out of the service under the present conditions.

Geriatrics Study Urged

In an address to the Gerontological Society at its convention in August, Dr. Edmund V. Cowdry of the Washington School of Medicine urged increased attention to the study of geriatrics in medical schools. He said there were very few full-time gerontologists—probably not more than 100—in the country. He also advocated the establishment of a specialty board for geriatrics. Increasing numbers of older people in our population make attention to their problems necessary, he said.

Nutrition Exams

The American Board of Nutrition will hold certifying examinations in Atlantic City, N. J., during April 1954. Completed applications of persons wishing to be considered for certification should be in the office of the secretary not later than February 1, 1954. Application forms may be obtained from the secretary, Otto A. Bessey, department of biochemistry and nutrition, University of Texas School of Medicine, Galveston.

Fellowships, Grants, Awards

Markle Grants

The John and Mary R. Markle Foundation will continue for a seventh year the Scholar in Medical Science program to help scientists on medical school faculties become established as teachers and investigators in their chosen fields. A total of 111 scholars on the staffs of 55 medical schools in the United States and Canada have been aided by these grants since the program began in 1948. Twenty-one were appointed in 1953. The number to be named in 1954 has not been determined.

Each medical school is invited to

nominate one faculty member as a candidate for the five-year, $30,000 grant. For support of each scholar selected, the medical school receives an annual grant of $6,000 for the term of the appointment. All nominations should be in the foundation offices on or before December 1, 1953. A booklet giving further information will be sent on request to the foundation, 14 Wall St., New York 5.

Runyon Research Fund

The latest allocations by the Damon Runyon Memorial Fund for Cancer Research, which totaled $146,860 for July and August, sent the grants since 1946 over the $7 million mark. An institutional grant of $7,000 to the Hitchcock Research Foundation at Dartmouth marked the first grant to New Hampshire from the foundation. The last remaining state, for which a research grant is expected to be made in the near future, is Mississippi. Current grants include allocations to four institutions in New York City as well as to the University of California, Notre Dame and the University of Buffalo.

Meetings

AHA

The fifty-fifth annual convention of the American Hospital Association was held in San Francisco, August 31 - September 3. Mrs. Oveta Culp Hobby, secretary of the Department of Health, Welfare and Education, was a principal speaker.

DR. BRADLEY

In his address at the opening convention session, retiring president Dr. Edwin L. Crosby stressed increased attention to preventive medicine as an important aid in reducing the costs of hospital care. Increased attention to ambulatory patients would also help prevent increased costs to hospitals, he said.

Dr. F. R. Bradley, professor of hospital administration at Washington University, St. Louis, was named president-elect. Ritz Heerman, administrator of California Hospital, Los Angeles, took office as president.

Registration at the meeting was 10,379. Since there was no meeting hall large enough to accommodate the group, closed-circuit television of general sessions was provided for the first time at an AHA meeting.

Psychological Association

The American Psychological Association's 61st annual convention was held in Cleveland, September 4-9. The program included symposiums on technical and professional problems and numerous individual research reports.

Psychology in medical education was the topic of a group discussion under the chairmanship of Dr. Ivan N. Mensh, Washington University School of Medicine, St. Louis.

Among films shown at this convention were three produced by the Medical Audio-Visual Institute of the Association of American Medical Colleges: "Embryology of Human Behavior," "Concept of Maternal and Neonatal Care" and "All My Babies."

Medical Illustrators

The 8th annual convention of the Association of Medical Illustrators will be held in Baltimore, Md., October 3-7. It was in Baltimore that the first school of medical art was established under the direction of Professor Max Brodel.

Exhibits at the meeting will include outstanding medical illustrations from the United States, Canada and several foreign countries. Sev-

eral of the sessions are of particular interest to medical educators.

Tropical Medicine

The annual meetings of the American Society of Tropical Medicine and Hygiene and the American Academy of Tropical Medicine will be held jointly this year at the Brown Hotel, Louisville, Ky., on November 12-14.

In addition to scientific sessions and annual business meetings, two symposiums will be held, one sponsored by the society on diarrheal diseases other than amebiasis, and the other sponsored by the academy entitled, "Global Interest in Tropical Medicine."

Pharmacology Society

More than 500 scientists from the United States and 15 foreign countries attended the fall meeting of the American Society for Pharmacology and Experimental Therapeutics at Yale University, September 7-9. Dr. Charles M. Gruber of Jefferson Medical College was installed as president of the organization.

Scientific sessions covered such subjects as analgesics, anti-convulsants, cardiac drugs, the central nervous system and drug enzymology. Nearly 150 papers were presented during the three-day society conference.

College Briefs

University of Buffalo

An introductory course in electrocardiography with major emphasis on its use in clinical practice began September 24 to run for nine consecutive weeks. Dr. ALBERT C. REKATE is in charge of the program which is held at Meyer Memorial Hospital.

University of Cincinnati

For the sixth consecutive year the college has received a grant of $68,000 from the Public Health Service for its psychiatric training program. Dr. MAURICE LEVINE is head of the department of psychiatry. The department's progress from three psychiatrists in training seven years ago to 28 in training now has been made possible by the public health grants. Psychiatrists from Ireland, Canada and many parts of the United States are currently training here.

The university is the center of a nationwide program to modernize and improve state laws concerning epileptics. Dean ROSCOE L. BARROW of the law school says that state laws dealing with epileptics have failed to keep pace with medical advances. A study is being made of legislation that is discriminatory toward epileptics.

Columbia University

The Columbia-Presbyterian Medical Center will mark its 25th anniversary with a two-day scientific and social program October 12-13. The focus of the program will be on new directions in education, medical research and care of the sick. The scientific phases will include symposiums, panel discussions and the presentation of papers on medical topics of current significance including surgery, pediatrics, public health, nursing, dentistry, human reproduction, medicine, neurology and cancer.

Duke University

Doctors from several states will attend a special postgraduate course in medicine October 12-16 under the joint sponsorship of the school and the American College of Physicians. The course will be concerned with the physiological basis of internal medicine. Three guest speakers and 22 members of the Duke medical staff will take part in the program.

Visiting faculty will be Dr. RICHARD V. EBERT, professor of medicine, University of Minnesota; Dr. JEROME W. CONN, professor of medicine, University of Michigan and Dr. CHARLES H. BURNETT, professor of medicine, University of North Carolina.

Georgetown University

The collection of manuscripts amassed by Dr. ALEXIS CARREL, surgeon who died in 1944, has been donated to the university medical center. The collection, numbering some 60 cases of papers, was received from the Rockefeller Institute in New York City where it has been housed since the scientist's death. Included in the collection are a number of unfinished manuscripts and experiments, as well as public works, letters, biological specimens and part of Dr. Carrel's reference library. The collection has been given to Georgetown by the surgeon's widow because her husband was educated by the Jesuits in Lyon, France.

Dr. PEARCE BAILEY, clinical professor of neurology, has been installed as president of the American League against Epilepsy at a meeting of the organization in Boston August 21-22. Dr. Bailey succeeded Dr. FRANCIS M. FORSTER, dean of the Georgetown Medical School.

George Washington University

Three new faculty members were named to the staff this fall. They are Dr. WILLIAM NEWMAN, assistant professor of pathology; Dr. GERALD FRED HUNGERFORD, assistant professor of anatomy and Dr. ROBERT A. CLAYTON, assistant professor of biochemistry.

Harvard University

In memory of a Harvard scientist who was a pioneer in the improvement of human health in the Philippines before the turn of the century, a group of officials and employees of the government of the Philippines has contributed $500 to the school of public health. It will go toward the Strong Professorship of Tropical Public Health. The money was raised through voluntary contributions from officials and employees of the Philippine Department of Health.

University of Illinois

Dr. JAMES A. CAMPBELL, recently appointed director of the medical service at Presbyterian Hospital, has rejoined the faculty of the college of medicine with the rank of professor of medicine.

University of Iowa

The medical school opened this fall under the leadership of Dr. NORMAN B. NELSON, who became dean on July 1. Dr. Nelson replaces the executive committee which has handled the administrative duties in the college since the death of Dean MAYO SOLEY in 1949. Dr. Nelson received his M.D. degree from the University of Southern California and Doctor of Public Health degree from Harvard. He served with the Los Angeles health department for several years prior to his appointment as associate professor of public health and assistant dean of the University of California at Los Angeles.

Dr. WILLIAM B. BEAN, professor of medicine, has been appointed chairman of the committee to program and plan the new research wing for clinical services. It is anticipated that this wing will connect the 750-bed university teaching hospital and the medical laboratories building. This wing has been made possible by a $900,000 grant made by the state legislature at its last session.

Dr. JOSEPH A. BUCKWALTER of the department of surgery has left for a year's study in the London Postgraduate Medical School under the supervision of Professor IAN AIRD.

University of Michigan

Two new members have been added to the staff of the recently incorporated testing laboratory of the National Sanitation Foundation, it has been announced by Dr. HENRY F. VAUGHAN, dean of the school of public health and president of the foundation. CHARLES A. FARISH comes from Columbia, S. C., where he was director of sanitation for the state board of health. JACK MCALLISTER, a graduate of the University of Michigan School of Public Health, comes from the Indiana State Health Department.

University of Minnesota

Recent advances in cardiovascular physiology and surgery were the subject of an international symposium September 14-16. Medical specialists from three foreign countries, 14 states and Canada spoke.

Continuation courses to be presented at the Center for Continuation Study during November include: fractures, November 16-18; dermatology, November 19-21.

College of Medical Evangelists

Some 45,000 histology slides have been prepared for student use, according to anatomy instructor PAUL M. FOSTER. Approximately 15,000 new oral histology slides, prepared for incoming students of dentistry, have been added to the 30,000 general histology slides which are used by both medical and dental students. Valued at nearly $35,000, the average slide in the collection is worth about 75 cents, but includes sections of the nerve endings which are valued at 40 times as much. Annual breakage is only about one slide per two students, Mr. Foster reports.

The new school of dentistry on the Loma Linda campus began classes August 31 with 42 freshmen enrolled. Plans are being made for a new dental clinic-training center which will cost approximately $1 million. Teaching and research facilities are being expanded to allow dental students to use the school of medicine laboratories before the completion of the new building.

Dr. DOROTHY JEANNE ANDREWS, who joined the staff of the sanitarium and hospital in August, is the institution's first full-time pediatrician.

Recent action of the board of directors included changes in two of the school names. The School of Laboratory Technique will be known as the School of Medical Technology and the School of X-Ray Technique as the School of X-Ray Technology.

"Frog breathing," a technique of swallowing air in the treatment of polio patients developed five years ago by CME alumni Dr. CLARENCE W. DAIL and JOHN AFFELDT, has been adopted by the National Foundation for Infantile Paralysis. The method permits patients who could heretofore spend only 4½ minutes outside of a respirator to increase their time to as much as 4½ hours.

New York Medical College

Recent appointments include: Dr. ARTHUR V. JENSEN, to associate professor of anatomy; Dr. SAMUEL J. PILIERO to assistant professor of anatomy; Dr. PAUL J. FODOR to assistant professor of biochemistry; Dr. STANLEY OPLER to assistant professor of pathology and Dr. IRWIN P. TRAIN to associate professor of surgery.

Dr. EDWARD J. NIGHTINGALE has been appointed student health officer and associate and assistant physician in the department of medicine.

New York University—Bellevue

Dr. WILLIAM N. HUBBARD JR. has been promoted from assistant to associate dean of the college of medicine and from instructor to assistant professor in medicine. Dr. Hubbard joined the faculty in 1949.

A course in radiological safety will be offered this fall by the department of industrial medicine of the postgraduate medical school. It will be given in cooperation with the U. S. Atomic Energy Commission and the NYU College of Engineering.

Recent appointments include Dr.

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JAMES MARION BRYANT, assistant professor of medicine at the postgraduate medical school, and Dr. RICHARD C. BOZIAN, instructor in medicine and in charge of the house staff for the fourth medical division of the school.

University of North Dakota

Dr. THEODORE H. HARWOOD, assistant dean and associate professor of medicine at the University of Vermont, has been named dean of the medical school. He succeeds Dr. W. F. POTTER, who resigned to devote full-time to his position as professor and head of the department of physiology-pharmacology.

DR. HARWOOD

Dr. THEODORE SNOOK has been made an associate professor of anatomy. He was formerly assistant professor of anatomy at the University of Pittsburgh.

Northwestern University

Several faculty members who had prominent roles in the development of Passavant Memorial Hospital will be honored by commemorative units in the new south pavilion. Those chosen for this honor include: Dr. MARION H. BARKER, late associate professor of medicine; Dr. ARTHUR H. CURTIS, professor emeritus of obstetrics and gynecology and former chairman of the department; Dr. SANFORD R. GIFFORD, late professor of ophthalmology and chairman of the department; Dr. DAVID S. HILLIS, late professor of obstetrics and gynecology; Dr. WALTER H. NADLER, late associate professor of medicine. The cost of the new south pavilion, including extensive remodeling within the hospital, will be about $3 million. More than half of the amount needed has already been subscribed to the building fund by individuals, firms and foundations.

State University of New York—Brooklyn

Visiting professors from Brussels, Belgium, Dublin, Ireland and Birmingham, England, have been appointed to the staff for the 1953-54 academic year. Dr. FRANCOIS KLEYNTJENS, adjunct professor and acting chief of the department of neurology at Brussels University Hospital will serve as visiting professor of physiology. Dr. EDWARD SOLOMONS, obstetrician and gynecologist of Dr. Steevens Hospital in Dublin, will be the joint guest of the college's department of obstetrics and gynecology and of Maimonides Hospital. Dr. BRIAN MACMAHON of Birmingham, England, who has spent the past year at the Harvard School of Public Health in the department of epidemiology as a Rockefeller Foundation fellow, will join the staff of the department of environmental medicine and community health.

Dr. HAROLD A. LYONS, assistant professor of medicine at Georgetown University School of Medicine and Dentistry, has been appointed associate professor of medicine at the college of medicine.

Ohio State University

An international conference on aviation physiology, held September 7-9, was attended by foreign guests and members of the profession from throughout the nation. The medical laboratories of the Civil Aeronautics Administration now operate on the campus as a joint project of the medical school and other colleges on the campus.

Dr. EDWARD J. MCCORMICK, AMA president, delivered the address at the seventh annual convocation of the college of medicine on September 29.

A postgraduate course in pulmonary diseases planned especially for general practitioners was held September 25-26 with the co-sponsorship of the college, the Ohio Tuberculosis and Health Association, the Ohio Trudeau Society and the Ohio State Medical Association.

University of Oklahoma

Dr. JEAN SPENCER FELTON has been appointed director of health service of the university hospitals in Oklahoma City. A specialist in industrial medicine, Dr. Felton also has academic appointments in the school of medicine as associate professor in the departments of medicine and preventive medicine and public health. He will establish the medical school's first course in industrial medicine this fall.

University of Oregon

The Oregon State Elks Association recently contributed $10,162 in continuing support of its program to aid visually handicapped children. The funds will be administered under the direction of Dr. KENNETH C. SWAN, professor and head of the department of ophthalmology.

The fall series of postgraduate courses began September 14 with a week-long session on the diagnosis and treatment of cancer. Guest speakers are Dr. ROBERT R. NEWELL, professor of biophysics, Stanford; Dr. CHARLES LUND, assistant clinical professor of surgery, Harvard; Dr. RUSSELL DE ALVAREZ, professor of obstetrics and gynecology, University of Washington.

University of Pennsylvania

Dr. ANTHONY J. J. ROURKE, director of the Hospital Council of Greater New York, is engaged currently as chief consultant in the planning for an alliance between the Pennnsylvania Hospital and the Graduate School of Medicine of the University of Pennsylvania. The buildings will provide additional and improved facilities for patient care, as well as for teaching and research.

Dr. RUDOLPH OTTO ANSELM HOBER, retired professor of physiology, died September 5 at the age of 79. He came to Pennsylvania in 1934 from his native Germany, where he had been president of the University of Kiel.

Due to completion of the new Thomas Sovereign Gates memorial pavilion, it has been possible to revise the entire fourth-year curriculum this fall. Housing of all outpatients in one centralized unit makes it possible for medical students to be trained in the same method of patient care which they are expected to use as practicing physicians.

University of South Dakota

Use of radioactive drugs by the school of medicine has been authorized by the Atomic Energy Commission for patients suffering from certain diseases. This is the first authorized use of atomic medicines for human patients in the state.

Stanford University

Plans to consolidate the medical school on the campus at Palo Alto have been announced by the board of trustees. The move from San Francisco is expected to take from three to five years. A special committee has been set up to plan for raising sufficient funds for the relocation of the medical school and its facilities. The decision to move the school was based on a year-long study, which concluded that the relationship of medical education and science to other scientific fields would be strengthened by bringing the school of medicine in closer relationship to the whole university.

Dr. LOREN R. CHANDLER retired from the deanship August 31, after 20 years in that position. Dr. WINDSOR C. CUTTING, professor and executive of the department of pharmacology and therapeutics, was named acting dean effective September 1. Dr. Chandler will remain on the medical college faculty as full-time professor of surgery.

The following appreciation of Dean Chandler, written by A. L. BLOOMFIELD, appeared in the *Stanford Medical Alumni News Notes* for July 1953:

"It is impossible in brief space to give an adequate appraisal of Yank Chandler. His withdrawal from the deanship is being met by universal

expression of regret which shows what a great loss Stanford Medical School has suffered.

"Yank took office 20 years ago and he saw from the start the true purpose of his job—to represent, aid and coordinate the activities of his faculty. The dean always had confidence in the judgment and ability of his staff. While his views on education were definite, sound and constructive, his usual method was to say to the faculty after clearly exposing the facts, 'Now you fellows decide what you want to do.' He was a true leader but never a driver; he stimulated his staff by suggestion rather than by edict.

"Yank set out quietly to qualify himself as the country's outstanding medical dean. He faithfully attended the meetings of the Association of American Medical Colleges, where his worth was soon recognized by the many responsibilities placed on him and finally by the presidency. He met and knew everyone of consequence in medicine and he appraised them with almost infallible judgment. He became an expert in his field. All this was done to prepare himself for better service to medical education and because he was truly interested in people—never for any political reason.

"With the students Yank was unique. They were all his own boys and girls; no mother could have taken a more personal interest. He found homes for them, helped them with every sort of problem—personal, educational, financial—worked out house staff positions for them. He was always accessible. At the end of a long hard day, coat off and grey with fatigue, no trace of impatience ever showed itself with a visitor in his office.

"One must wonder what motivated the man through the years to sacrifice so much. Let us not analyze too closely. Let us rather give thanks that we can have the example of a man kind of heart and high of ideals to whom service of this sort is a consecration which demands no material reward. He loved and believed in Stanford; perhaps that was in part the answer.

"Now that his term of official deanship is over, we are sure his wisdom and advice will still be sought and no doubt given freely. His return to more extensive practice, to teaching and research—'tomorrow to fresh fields and pastures new'—will only open further avenues of activity in which every friend wishes him happiness and success."

University of Southern California

The 25th anniversary of the school was celebrated September 24-25 with a banquet and convocation on phases of medical education and research. Dr. ALAN GREGG, medical director of the Rockefeller Foundation, addressed the formal dinner held during the anniversary.

University of Tennessee

The Public Health Service has awarded grants totaling $45,012. The total includes $25,000 which will be used to improve the teaching of cancer in the college. It also includes a grant of $7,500 which will be used to familiarize the women of Shelby County with the cervical cancer detection program now being conducted. Dr. C. C. ERICKSON, professor of pathology, was awarded $7,225 to conduct research on cancer of the cervix. Dr. ALBERT M. HAND, instructor in pathology, was awarded a grant of $5,184. He is attempting to improve the treatment of phenomena in the newborn.

The following Public Health Service grants also have been reported: Dr. J. P. QUIGLEY, chief of the division of physiology, and Dr. HORTENSE LOUCKES, instructor in the department, were awarded $8,000 for fundamental studies on the mechanism of gastric evacuation. A $4,000 award was made to investigators in the department of orthopedic surgery for a continuation of their study on the diagnosis of potential necrosis of the head of the femur.

The postgraduate department is offering three courses this fall for

mid-south physicians. They are: obstetrics and gynecology, October 21-23; pediatrics, November 4-6; cardiovascular diseases, November 18-20.

Two new buildings are planned for the college of medicine. On November 1 bids will be received for construction of a medical-surgical building which will provide additional facilities for research of cardiovascular diseases. On December 1 bids will be received for the construction of an administration-postgraduate building, estimated to cost about $750,000. The building will have five floors, including a basement. It will relieve a shortage of space for the library, since administrative offices are now housed in the lower floors of the library building.

SKETCH OF the projected new administration-postgraduate building at the University of Tennessee. It is to be built of reinforced concrete with a brick veneer exterior and interior walls of hollow tile. Present plans call for air-conditioning throughout.

University of Texas (Galveston)

Dr. TRUMAN G. BLOCKER, professor of surgery, has accepted an appointment as dean of the faculty of medicine. Dr. Blocker has returned recently from an inspection tour of the medical installations in Japan and Korea, with special attention to methods of handling shock and thermal burns. In his new responsibilities at the medical branch, Dr. Blocker will continue to promote close coordination and cooperation between

THE UNIVERSITY of Tennessee College of Medicine will advertise for bids for construction of a medical-surgical building about November 1. Cost of construction is estimated at $1 million. The building will provide expanded facilities for research of cardiovascular diseases.

clinical and preclinical teaching, research and service.

Dr. DONALD DUNCAN, professor of anatomy and chairman of the department, has been appointed associate dean of the graduate school of the university for the medical branch. The branch now offers the master's degree and the Ph.D. degree in anatomy, physiology, biochemistry and nutrition and pharmacology.

EDGAR N. CAPPLEMAN, C.P.A., recently accepted the position of acting administrator of the medical branch hospitals in Galveston. The completion of the new John Sealy Hospital building and of the Henry and Rosa Ziegler Memorial Hospital for diseases of the chest, will increase the bed capacity of the medical branch hospitals from 700 to 1,500. Opportunities are offered at the hospitals for intern training in hospital administration under the direction of Mr. Cappleman.

GEORGE H. CROSBY has accepted an appointment as director of the medical technology curriculum and the extra mural program.

A special pharmacological symposium was held at the medical branch September 24-25. Guest speakers included Dr. KNUD MOLLER, professor of pharmacology at the University of Copenhagen, and Dr. FRITZ EICHHOLTZ, professor of pharmacology at the University of Heidelberg. Dr. Moller gave a special lecture on pharmacological aspects of connective tissue with particular reference to the action of ascorbic acid. He also gave seminars on the treatment of barbituric acid poisoning and of alcohol formed in blood and organs after death. Dr. Eichholtz discussed chemotherapy of helminth infections and general aspects of current chemotherapy.

Dr. FRANK B. ENGLEY, associate professor of bacteriology and parasitology, is spending two months prior to the microbiology congress in Rome at the University of Zurich with Dr. MARTIN ALLGOWER in a study of rates of wound healing, using tissue culture techniques.

AUTHOR ADDRESS

Following publication of "Making a Doctor—the Need for a New Educational Approach" in the September issue of MEDICAL EDUCATION, the Journal office has received some requests for the address of Dr. Joseph C. Collings, author of the article. Dr. Collings may be reached at Villa Bardellini, Lerici, La Specia, Italy.

Dr. DON W. MICKS, associate professor of entomology, has a Fulbright Fellowship for study and research at the University of Rome on insect vectors of disease.

Dr. KENNETH M. EARLE, who has been associated with Dr. WILDER PENFIELD at the Neurological Institute of McGill University, Montreal, has accepted appointment as associate professor of neuropathology at the medical branch. Dr. Earle will conduct teaching and research jointly in the department of pathology and neurology and psychiatry.

Tulane University

Dr. LAWRENCE PETERS has been named chairman of the department of pharmacology. He formerly was a member of the faculty of Western Reserve, where he became a Markle scholar.

The sum of $12,000 has been presented by the Louisiana Chapter of the Arthritis and Rheumatism Foundation for study and research in rheumatoid arthritis. The work will be under the direction of Dr. THOMAS E. WEISS and Dr. MARIDEL SAUNDERS of the department of internal medicine.

Dr. L. M. N. BACH, associate professor of physiology, has been chosen executive director of the Survey of Physiological Science which is being sponsored by the American Physiological Society and is the first project of this type to be supported by the national foundation. Dr. Bach is on leave for a year to complete this assignment.

University of Vermont

Dr. WILHELM RAAB was director of the International Symposium on Cardiovascular Regulation, held in Burlington September 8-10. The symposium was sponsored by the Vermont Heart Association, New Hampshire Heart Association, the college and a private foundation. A two-day cardiological seminar was held following the symposium.

Grants totaling over $170,000 have been made available to the college for the next year.

Yale University

Dr. SAMUEL C. HARVEY, professor emeritus of surgery in oncology, died August 23. Dr. Harvey, who retired a year ago, had continued active in research activities at the school. He was chairman of the department of clinical medicine at Yale from 1931 to 1947, when he became professor of surgery in oncology.

Audiovisual News

Sharing Costs of Film Ownership

A Plan for Developing Local or Regional Medical Film Libraries

AS THE VALUE of films in medical education has gained more recognition, the problem of film distribution has become more acute. While ownership insures the best utilization of instructional materials, the high unit value of films demands that in many cases they be shared among many users.

Some films are used so seldom that they must be shared on a national basis and the problems and expense of national distribution accepted. Other films are so basic and consequently are used so often and over so many years that, logically, they should be owned by the individual medical school or department. In between these extremes are films which, while they are used regularly once or twice a year, do not warrant purchase by any one school or department. These films are more economically and conveniently held by a regional or area library.

Medical schools within close proximity to each other can realize the advantages of local ownership by cooperating in the development of a local library. Films which are used too seldom to be bought by every college may be shared between two or more colleges and the ancillary medical teaching units within the same area, (e.g., nursing schools, dental and veterinary medical schools, teaching hospitals, schools of pharmacy, et al). In this way availability by telephone is insured without long advance orders and considerable transportation costs.

Medical schools plannng to take advantage of a film library development on a shared basis should establish sound and commonly understood principles of finance, film handling and film acquisition. The college with the best resources in terms of interested persons and physical facilities might reasonably accept the responsibility for operating the library on behalf of the other teaching units, and a budget should be established which will insure that the operating unit will not carry a disproportionate burden. All units should contribute to the cost of the operation on a simple pay-as-you-use basis.

Principles of Finance: The method of finance should be simple, equitable and accurate. Initial capital may be provided on a shared basis by two or more of the cooperating units. Service charges to each participating unit should include both amortization of the capital (films) and the costs of handling.

Principles of Acquisition: Those films which are basic, relatively non-obsolescent and will have some common demand among the sharing units should be bought. In addition there are many films potentially available on a free basis for indefinite loan to any library which can insure adequate use, (e.g., government, health agency, pharmaceutical house films). A cooperative library as here suggested would be eligible for such films.

The film library will have to be developed with the full knowledge and understanding of the participating units. This means that development in terms of film acquisition will necessarily be slow and cautious. Films are not eligible for procurement unless all units are informed about them and adequate use is predicted.

A Plan of Operation (by example): Medical colleges A, B and C, and ancillary teaching units D, E, F, G and H within a city or region agree to initiate a film library with a $6,000 budget covering film purchases and library operations for the first year. Schools A, B and C agree to provide $2,000 each for operating capital. School A accepts the responsibility for operating the library and providing services on a service-charge basis.

Experience in other fields indicates that it will cost about $1 to handle a single film booking, including space, equipment, inspection, repair and supplies. Experience and predicted use also would indicate that to amortize the capital costs of each $50 film an additional charge of $1 should be made to cover the depreciation and, more important, the obsolescence of the film. Thus, each booking would total $2. A total of 10 showings or bookings per year for five years would completely return the capital costs of a $50 film as well as the costs of its handling.

Size of Library: Since the library will necessarily include only basic materials used often enough to justify storage and risk obsolescence, the number of films held when the library is operating fully will be comparatively modest. Assuming that the average cost of all films (free and otherwise) is $50 each, a budget of $6,000 for the first year would provide for the purchase of 100 films ($5,000), and would allow $1,000 for the handling of a thousand bookings. The total income during the first year of full operation would be $2,000.

To fully retain the library capital, the minimal budget for the second year of full operation would be:

Expenditures

Capital maintenance (purchase of 20 new films)	$1000.00
Operation (salaries, supplies, equipment, space)	1000.00
	$2000.00

Income

Bookings to member units (1000 x $2)	$2000.00

Physical Facilities: A small, lighted film repository and work space will be required. This should be adjacent to the staff member or department responsible for the administration of the film library; i.e., the audiovisual coordinator, library, departments of medical illustration or clinical photography. In addition, the repository should be located where it is easily and freely accessible to the other participating units.

Equipment: The basic equipment should include a film rack, a work bench, a film rewinder and a splicer.

Staff: The operational staff must necessarily be on a part-time basis. The regular secretary of the film library administrative officer might logically have a part of her salary budgeted to film operations. In this way she is on call at any hour of the day, although she would handle an average of only about four bookings per day.

The secretary-booker might or might not inspect and repair the films, depending on her other demands and interests. Actual inspection and repair could be handled readily by a student working on an hourly basis.

Accounting: The accounting procedure should be as simple as possible and will vary according to institutional practices. Each department should be debited with each film booking, and accounts should be rendered on a regular basis.

Summary: Medical schools are increasingly making regular use of certain teaching film materials. While the cost of time, inconvenience and postage required to bring these materials in for use is considerable, the purchase price of the films is usually sufficient to discourage ownership of many of them by any one medical agency. Two or more medical colleges, along with ancillary medical teaching groups, may gain the real benefits of ownership by cooperating in the purchase of a library of commonly used films and by making arrangements for suitable housing, handling and accounting on an equitable basis.—J. EDWIN FOSTER.

Summaries of Film Reviews

The Lymphatic System*

45 min., sd., color, 16 mm., 1950.

Following an introduction to the nature of lymph and lymph vessels, the lymph drainage of the dog's foot is demonstrated after injection of Evans blue into the pad. The anatomy and sieve function of the lymph node are diagrammed. The deep cervical lymph pathways are demonstrated in dog, monkey and cat by Evans blue drainage from the nasal mucosa and from the subarachnoid space. Normal chyle flow from the thoracic duct is contrasted with the appearance of Evans blue and neutral red in the chyle following IV injection. The origin and circulation of lymph and lymphocytes is diagrammed.

This film is essentially a demonstration of lymph circulation experiments as developed by the scientific advisor (Yoffey, with Drinker), admixed with some general material on the lymphatic system. Abundant and clear procedural detail is matched with rather inadequate explanatory data. Flowing and versatile camera treatment of individual demonstrations brings out details of anatomy with precision, although orientation is not always satisfactory for students. Picture and narration are well bonded. However, the animated diagrams are inept and inarticulate.

As a contribution to the teaching presentation of lymphatic structure and function, the demonstrations are excellent, despite the length and repetitiousness of the total film. The valuable illustrative material should be used in part, or preferably as excerpts, in the integrated teaching of lymphatic physiology. Surgeons will find food for thought in the experiments.—*A.N. with MAVI Panel, February 1953.*

Audience: Students of physiology.

Production Data: Sponsor: Imperial Chemical Industries, London. **Author:** J. M. Yoffey, assisted by W. K. Metcalf, department of anatomy, University of Bristol. **Producer:** I.C.I. Film Unit. **Direction and Camera:** Cyril Jenkins.

Distribution: Imperial Chemical Industries (N. Y.), Ltd., Film Library, 521 Fifth Ave., New York 17, N. Y. Not available for sale. **Rental:** $8 for 3 days, $16 for one week.

*This film will be included in the 1953-54 Preview Circuits for Medical Colleges.

Pressure Steam Sterilization*

28 min., sd., color, 16 mm., 1952.

Certain of the great personalities of bacteriology are used to introduce the role of moist heat, its coagulation of bacterial proteins, its penetrational characteristics and its methodical application as embodied in the modern autoclave. The principles of loading a surgical autoclave with various materials (packs, utensils, rubber gloves, instruments, et al.) are covered. The step-by-step handling of a manual autoclave is demonstrated, including the special manipulation of culture media to prevent ebullition. Handling of semi-automatic autoclaves is demonstrated; and special types of autoclaves are shown.

The purpose and scope of the film is to show the principles and basic method of handling an autoclave properly, with particular application to hospital uses. The film is of fundamental value in medical technology, is presented competently in formal, clear, didactic fashion and in illustrated lecture format, but developed with honest productional skill.

The film will effectively transmit the key facts of autoclave handling to students of bacteriology, nursing and medical technology. When used as an introductory presentation, it should assist in establishing a good hospital autoclave routine.—*D.S.R., with MAVI Panel, July 1953.*

Audience: Students of medical technology, nursing, bacteriology.

Production Data: Sponsor: The American Sterilizer Company, Erie, Pa.; **Scientific Advice:** Harry E. Morton, Sc.D., University of Pennsylvania and John F. Perkins, M.S., American Sterilizer Company, for the Society of American Bacteriologists; **Producer:** Sturgis-Grant Productions, Inc., New York City; **Direction:** Warren Sturgis; **Camera:** Carl Brose; **Animation:** Harry Hamsel.

Distribution: American Sterilizer Company, Erie, Pa.; Sturgis-Grant Productions, Inc., 322 E. 44th St., New York 17, N. Y. and The Society of American Bacteriologists, Committee on Materials for Visual Instruction in Microbiology, department of bacteriology, University of Pennsylvania School of Medicine, Philadelphia 4; **Loan.**

Gram's Stain—
A Demonstration of the Technic*

11 min., sd., color, 16 mm., 1950.

Hucker's identification of the original method of Dr. Christian Gram is carried through, step by step: cleaning and preparation of the slide; preparation of the smear to be stained; staining with Hucker's crystal violet, washing and

drying; destaining with 95 per cent ethyl alcohol, washing and drying; and counter-staining with safranin, washing and drying. The final smear is examined under the microscope to demonstrate Gram positive and negative bacteria.

By its own cautious and precise titles, the film limits itself to a fundamental and well recognized method, without reference either to principles or uses, and with acknowledgment of the existence of personal differences in details. Organized in simple, direct and clear fashion, the film suffers only from photographic difficulties which make it essential that the projection room be very dark. It is unfortunate that Bunsen flame, transparent slides, final demonstration smear, etc. were not handled in such photographic fashion as optimally to reveal shapes, colors and manipulations, although in general these are reasonably well seen and are clear.

If the photographic shortcomings are minimized by proper projection, the film will act effectively as preliminary instruction for all those students who must learn this basic technic of bacteriology. The film can be utilized in lectures and laboratories in bacteriology.—*D.S.R., with MAVI Panel, July 1953.*

Audience: Students in bacteriology.

Production Data: Scientific Sponsorship: The Committee on Materials for Visual Instruction in Microbiology of the Society of American Bacteriologists; **Script and Direction:** Harry E. Morton, Sc.D., University of Pennsylvania, W. Whitney Smith, Ph.D., Utah State Agricultural College, and Warren Sturgis; **Producer:** Sturgis-Grant Productions, Inc.; **Camera:** Warren Sturgis.

Distribution: Harry E. Morton, Sc.D., professor of bacteriology, University of Pennsylvania School of Medicine, Philadelphia, and Sturgis-Grant Productions, Inc., 314 E. 46th St., New York 17, N. Y., **Sale,** $75, or **Loan,** $3.50.

Cardiac Output in Man

38 min., sd., color, 16 mm., 1951.

An introduction shows Stephen Hales' liquid wax technique for calculation of cardiac output, and diagrams the principle and calculations of the direct Fick method in living man, in which a subject inhales measured oxygen from a spirometer barrel. Dr. Werner Forssmann relates his pioneering venous self-catheterizations of 1929. Fluoroscopically-controlled insertion of a venous catheter is demonstrated in detail; manometric readings are taken from point to point; and blood samples are withdrawn. By diagram and demonstration, the Haldane blood-gas apparatus is shown being used to determine the cardiac output. Intracardiac pressures are measured by the strain gauge. In the Hamilton dye method a time-concentration curve is determined from arterial blood samples; cardiac output is calculated; circulation volume is shown to be calculable by the method.

The film essentially portrays the Fick and Hamilton dye methods for calculation of the cardiac output in man, as performed in Dr. McMichael's laboratory. Ballistocardiography and the use of radioactive isotopes are not considered, nor are the physiological or clinical significances covered, nor are principles explained. In addition, despite the tendency to abundant procedural detail, common technical difficulties are omitted. Analytical camera treatment, flowing continuity and careful timing of views and narration characterize the production. However, the animation of strain gauge and Haldane apparatus produces no clarity or understanding, nor can the rapid calculation of the dye curve be followed.

The beautiful and precise demonstrations of the two methods are the essence of the film, and Dr. Forssmann's account of his self-experimentation is most moving. Apart from these, the film cannot be regarded as a systematic exposition of material on cardiac output. Its use, therefore, must fall into correlative clinics, perhaps, or excerpts of the two methods can be used in teaching cardiac physiology.—*A.N., with MAVI Panels, January 1953.*

Audience: Medical students, interns, residents, clinical physiologists.

Production Data: Sponsor: Imperial Chemical Industries, London; **Scientific Collaboration:** department of medicine, Postgraduate Medical School of London, Prof. J. McMichael, director; **Producer:** I.C.I. Film Unit; **Direction and Camera:** Cyril Jenkins; **Animation:** J. and R. Goodliffe; **Cineradiography:** Watson & Sons, Ltd.

Distribution: (In U.S.) Imperial Chemical Industries, Film Library, 521 Fifth Ave., New York 17, N. Y., **Sale:** apply; **Rental:** $4.

Demonstration of Cushing's Experiment on the Dog

14 min., sd., color, 16 mm., 1948.

A dog is anesthetized, a tracheal cannula placed and a parietal bone opening cut for insertion through the dura of a metal cerebrospinal fluid cannula. A cannula is placed in the femoral artery and a manometer attached. The pumping of saline into the subarachnoidal space cre-

ates increased intracranial pressure; rising blood pressure and falling pulse rate with apnea are recorded; as pressure falls, tracings return to normal. Bulging eyeballs and extensor spasm of the claws are demonstrated. Common carotid and vertebral arteries are clamped; this interruption of the main blood supply to the brain creates rising blood pressure with hyperpnea.

This demonstration of an important physiological experiment presents the material inadequately, since it omits the clinically important early and gradual rise of pressure, explains too little of the physiological mechanisms underlying the tracings, omits the role of the carotid sinus and devotes too much time to routine procedures. Visual sequences are disjointed, most conspicuously in the jumps of the kymograph drum tracings. The tracings are too small, are all of the same color, and the poorly arranged styli collide. The drawings are too small, and their lettering is illegibly tiny.

In spite of its weak presentation, the film can be moderately well followed. Yet instructional usefulness in physiology is limited, for reasons of the shortcomings of content and production alike. Under any form of use, the film's information naturally requires expansion and modification by the teacher.—*A.N., with MAVI Panel, April 1953.*

Audience: Students of neurophysiology.

Production Data: Producer: U. S. Army.

Distribution: Address loan requests to: Commanding General, Attention: Surgeon, Headquarters, First to Sixth Army (according to location of user); use Code No. PMF-5111.

Coarctation of the Aorta

16 min., sd., color, 16 mm., 1952.

In a 12-year-old boy with coarctation of the aorta, the characteristic blood pressure and x-ray findings are shown. A left standard thoracotomy incision is made in segments in order to control bleeding from the extensive and enlarged collateral vessels. The fifth rib is resected, and the lung is retracted to expose the site of coarctation distal to the dilated subclavian artery. Dissection of the vessels deriving from the aortic arch and aorta is carried through. Aortic clamps are placed on each side of the coarctation; the area of coarctation is excised, and end-to-end anastomosis is performed, allowing in the method of suture for expansion of the vessel during growth. Removal of clamps shows vigorous distal segment pulsation. Closure of the chest and demonstration of the operative specimen precede views of the patient taken three months postoperatively.

This is a beautiful demonstration of the surgical correction of that type of coarctation of the aorta which lends itself to resection and end-to-end anastomosis, performed with excellent technique, but failing to visualize dissection and mobilization of the aorta. Good surgical cinematography views the procedure from optimal angles, but the narration deserves tighter linkage with the screen and better enunciation.

As a splendid demonstration of technique, the film will be of interest to cardiac surgeons and surgical residents. Since the principle of the procedure is both simple and graphically clear, internists, practitioners and medical students may find the film of value.—*A.N., with MAVI panel, May 1953.*

Audience: Cardiac surgeons, cardiologists, general practitioners, medical students.

Production Data: Sponsor and Producer: Davis and Geck, Inc.; **Authors:** Danton A. Cooley, M.D., and Michael E. DeBakey, M.D., Baylor University College of Medicine, Houston, Texas.

Distribution: Surgical Film Library, Davis and Geck, Inc., 57 Willoughby St., Brooklyn 1, N. Y., **Loan.**

Control of Filariasis in Tahiti

15 min., sd., color, 16 mm., 1950.

Following an introduction to Tahiti, six cases of elephantiasis are seen. The Filariasis Control Project in Tahiti is introduced. The life cycle of the filarial worm is described. Culicine mosquitoes are caught in order to survey the incidence of larvae filariae; the life cycle of the mosquitoes is briefly shown. A thick blood film survey of the population for microfilariae is carried out. Supportive medical care for elephantiasis is indicated. Community control of mosquitoes is demonstrated; reduction of microfilariae in infected persons by Hetrazan (diethylcarbamazine) (Lederle) tablets is carried through simultaneously; health education is shown to be the key to cooperation.

This film report of a disease control program in Tahiti also seeks to cover in a superficial way all the principal aspects of filariasis. The clinical cases of elephantiasis are impressive, but all else is scientifically elementary and sketchily

developed. The production is of student caliber, as good perhaps as might be anticipated from report footage probably shot wild in Tahiti by the U.S.C. members of the control program. The life cycle chart is quite crude and unsatisfactory. The photomiography is only average. There is no clear classroom or audience objective, and whatever effectiveness there may be is gained through the impact of a deforming disease occurring in an exotic setting.

The film may be found useful wherever an introduction to filariasis and the methods of its control may be pertinent. The clinical sequence to elephantiasis may be valuable as an excerpt. As an orientation it will on occasion be adequate, but will require competent discussion if used with students of science. *—D.S.R., with MAVI Panel, July 1953.*

Audience: Students of tropical medicine and parasitology.

Production Data: Producer: Department of Cinema, Univ. Southern California; **Written and Edited:** Sibil Kamban, Richard Kaplan; **Photography:** Igor and Prudence Allen; **Scientific Advice:** department of medical microbiology, U.S.C., Dr. John F. Kessel, Mel Sloan.

Distribution: University of Southern California, Audio-Visual Services, Department of Cinema, 3518 University Ave., Los Angeles 7, Calif.; **Loan** or **Sale.**

Clinical Shock

50 min., sd., b & w., 16 mm., 1952.

Erroneous prior concepts of the primary and secondary segments of the shock syndrome are contrasted with the recent mechanical concept of shock as a reduction in effective circulation volume —a dynamic process. The several causes of secondary shock are shown to produce the same circulatory alterations, with hypoxia leading to anoxia and necrobiosis. The causes of oligemic shock are presented. Body reactions to shock are described in sequence, with emphasis upon the neurovascular mechanism. The methods of accurate diagnosis and management of shock are covered. The management of myocardial infraction, representing a case of propulsive-failure shock, is demonstrated. Causes and treatment of venous-pooling shock are epitomized in a case of volvulus of the sigmoid. In a case of spinal cord trauma, capillary-dilatation shock is managed. Erroneous diagnosis and treatment is dramatized, and rules to be followed are summarized.

The film seems to present a current orientation toward the newest concepts of shock, with emphasis on the demand for etiological differentiation as the basis for successful management. Information is valid if elementary. Presentation is that of a concentrated and lengthy lecture on the sound track. The accompanying visual material seeks only to illustrate words or sentences, or interjects unrelated flashbacks as filler material. Animation is disjointed, overschematic and fragmentary, and often is used where live action would have been vastly superior. The use of actors in the clinical scenes minimizes the impact of authenticity. The satire on the three consultants has interest and originality.

The general aspects of the current concept of shock are successfully conveyed to suitable medical audiences. However, constant reiteration of verbal and visual content plus inordinate length create difficulties in understanding and make the film very tiresome indeed. Reduction to 15 minutes and/or more specific visual clinical and physiological data would greatly increase the film's effectiveness with first and second year students of medicine, as with practitioners.—*A.N., with MAVI Panels, May 1953.*

Audience: First-year students of medicine and nursing; general practitioners.

Production Data: Producer: U. S. Army, for American College of Surgeons; **Scientific Directors:** John D. Stewart, M.D., and William H. Potter, M.D., Buffalo; **Advisory Committee:** Drs. Franklin G. Balch, Charles H. Best, Alfred Blalock, Howard K. Gray, Henry Harkins, and Dallas B. Phemister. (No credit titles appear on film.)

Distribution: Address loan requests to: Commanding General, Attention: Surgeon, of the Army area in which the film user is located, using Code No. PMF-5801.

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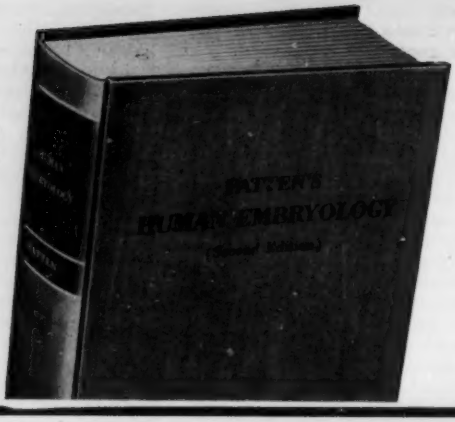

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JME 10-53

Book Reviews

Epidemics in Colonial America

John Duffy. Louisiana State University Press, Baton Rouge, La., 1953. 274 pp. with index. $4.50.

Mr. Duffy has produced a volume that makes easy and interesting reading. It is the first comprehensive study of epidemic diseases in colonial North America produced since 1799. Strictly historical in its approach, it is a valuable contribution to an aspect of colonial times that is usually ignored. It merits a place on the shelves of every medical and historical society library and should be read by all who are interested in the problems related to the development of public health in our original thirteen colonies.

The source materials for this volume were diaries, journals, newspapers and reports made by clergymen sent to North America by the Society for the Propagation of the Gospel; men who frequently attended to the cure of ailing bodies as well as souls and who were in an excellent position to evaluate the extent of damages due to epidemic disease.

Our colonial ancestors were plagued by epidemic diseases. Knowing a little about contagion and having no concept whatsoever of infection, the social and economic development of life in colonial times was periodically impeded, if not disrupted, by epidemics. The colonists were harassed by the epidemic diseases that they or their forefathers had known in England or on the continent, and in addition were afflicted by yellow fever.

Mr. Duffy ranks malaria, respiratory maladies and the dysenteries as the most destructive diseases which distressed the colonists. Yellow fever, smallpox and diphtheria gave rise to great terror in their suddenness, but in the long run they were not so costly as the first three.

The end result of epidemic diseases on the development of the colonies is not clear. They continued to thrive and develop rapidly despite the ravages of epidemics. The author attributes this to the absence of any densely congested urban areas and to the isolation of colonial settlements from each other as well as from the mother country.

Faulty housing and inadequate diet undoubtedly were predisposing factors in rendering the most vigorous colonists susceptible to epidemic diseases.

B. W. Lewis, *Industrial Hygiene Section St. Louis Health Division*

Cornell Conferences on Therapy, Vol. VI

Harry Gold, M.D., managing editor. The Macmillan Company, New York, 1953. 287 pp. $4.

In an introduction to this series, the following statement is made: "In ward and clinic the student is often told to do what in pharmacology he has been taught to avoid, and, conversely, in pharmacology he often learns to expect what turns out to be alien to the experience of the clinic. It is quite clear that neither has taken full advantage of the opportunities afforded by the other. It is also clear that there is an urgent need for a forum where pharmacologists and clinicians may come together and talk these things over. That, in essence, is the purpose of the Conferences on Therapy." It is the opinion of the reviewer that this has been accomplished to a degree that cannot be appreciated unless the book is reviewed in detail.

Fifteen conferences are encompassed in this small volume. Each conference is quite complete and satisfying, yet just enough controversy is introduced to prevent static acceptance of all expressed opinions. This is the essence of dynamic teaching. The reviewer was particularly pleased with the conference on the "Treatment of Coma." However, there are no bad conferences. Each has a degree of excellence rarely attained in such informal exercises.

The Cornell conferences are not only filling an obvious need in undergraduate medical education, but they are a rich source of information on detailed therapeutics for busy practitioners.

There are few teachers of medicine, hospital staff personnel or undergraduate students of medicine who will not be safer physicians if this unique volume is read carefully and the recommendations for the alleviation of symptoms and cure of disease followed sanely.

William B. Porter,
Med. Coll. of Virginia

Clinical Diagnosis by Laboratory Methods, 12th edition

James Campbell Todd, Ph. B., M.D., late professor of clinical pathology, University of Colorado School of Medicine; **Arthur Hawley Sanford**, A.M., M.D., emeritus professor of clinical pathology, the Mayo Foundation, University of Minnesota; **Benjamin B. Wells**, M.D., Ph.D., professor of medicine, School of Medicine, University of Arkansas. W. B. Saunders Company, Philadelphia and London, 1953. 946 illustrations. 998 pp. $8.50.

In this latest edition of their book, the editors introduce a new author, Dr. Wells, whose training and ability in laboratory methods have been outstanding. The book retains its familiar format and compiles an impressive working knowledge of laboratory methods in the same clear, concise form characteristic of previous editions. The latest methods are described for examination of urine and blood, including recent changes in blood groupings and the significance of the "L. E." cell. Changes also have been made in the sections on bacteriology and serology.

The volume is current, useful and attractively arranged to meet the needs of student, practitioner and laboratory technician.

A Text-Book of Pharmacognosy, 6th edition

George Edward Trease, B. Pharm., Ph.C., F.R.I.C., F.L.S., director of pharmaceutical studies and head of the department of pharmacy in the University of Nottingham. Bailliere, Tindall and Cox, London, 1952. American distributors: The Williams & Wilkins Co., Baltimore. Illustrated. 821 pp. with index. $8.

Professor Trease's "Text—Book of Pharmacognosy" has been a standard reference work in the field for a number of years. The sixth edition will continue to serve in this capacity. A consideration is given to botanical drugs that are currently of interest; e.g., veratrum, cocculus and curare, as well as the crude drugs of an older materia medica.

The text is divided into five parts. Part one deals with general principles of pharmacognosy, including a description of the London commerce in crude drugs. Part two, the largest segment of the book, is concerned with drugs of vegetable origins; part three with drugs of animal origin. Part four considers the chemistry of drug constituents, with a section on chromatographic analysis. Part five deals with the subject of microscopy from the standpoint of the pharmacognocist. Ten maps indicating the sources of vegetable drugs are included, with a glossary of Latin words used in naming botanical species.

The text will be useful to students of pharmacy and those concerned with the source and properties of crude drugs of vegetable and animal origin.

Ballistocardiography

William Dock, B.S., M.D., F.A.C.P., professor of medicine, State University Medical Center at N.Y.C.; **Harry Mandelbaum**, M.D., F.A.C.P., lecturer, State University Medical Center at N.Y.C.; **Robert A. Mandelbaum**, B.A., M.D., assistant in medicine, Jewish Hospital of Brooklyn. The C. V. Mosby Company, St. Louis, 1953. With 153 illustrations. 293 pp. with index. $9.50.

Whether or not ballistocardiography will ever occupy a place as important as the electrocardiogram in the diagnostic armamentarium of the practicing physician time alone will tell. This new book approaches the subject with clarity and completeness. It presents the facts and allows the reader to draw his own conclusions.

The authors are cognizant of the many physical handicaps with regard to the taking of ballistocardiograms. Standardization of methods is imperative if the ballistocardiogram is to be widely accepted and approved. As with any diagnostic tool, it is better to underdiagnose rather than over-diagnose any defects noted. As the authors state so succinctly, "if used intelligently, they (the ballistocardiographs) should do far more good than harm in the detection and management of disease, and in programs for reducing cardiac disability."

The book is well printed, well written and deserving of appraisal by all physicians.

Frazer's Manual of Embryology, 3rd edition

J. S. Baxter, M.A., M.Sc., M.D., F.R.C.S.I., professor of anatomy, University College, Cardiff. Bailliere, Tindall and Cox, London, 1953. American distributors: The Williams & Wilkins Co., Baltimore. Illustrated. 488 pp. with index. $8.

Designed as a textbook of human embryology for students of medicine, the book covers the development of organ systems in great detail, but depends too much on the student having a wide background in gross and neuroanatomy. Descriptions are too brief to serve as a substitute for the information obtained in original articles by investigators and no bibliography appears to refer the student to the works of the few authors to which references are made.

Brief descriptions follow one another with bewildering frequency. The organization of the chapters is regional. Consequently, there is considerable redundancy in the book.

The first section has been rewritten almost completely by Dr. Baxter. This section is very good.

Illustrations are chiefly schematic sketches, but they illustrate the subject rather forcefully. It may be inferred from the illustrations and discussion that the author's interest was chiefly with those changes in relative position and structure that can be observed with low powers of magnification.

This text could be useful for a busy professor who wants a quick review of the subject to call attention to points which might not be fresh in his mind. It is limited for use as a textbook in medical schools of this country.

Medicine of the Year, 1952

John B. Youmans, M.D., editor-in-chief, J. B. Lippincott Company, Philadelphia, 1953.

This small book reviews briefly but adequately the more significant publications in the entire field of medicine, surgery and the various specialties during the year 1951. Under the general editorship of John B. Youmans, the various sections were written by 25 different authors, each of recognized standing in his field. Bibliographies are given at the end of each section, and both author and subject indices are carried at the end of the volume.

Books and Pamphlets Received

(As space permits, those with the greatest interest to our readers will be reviewed)

Peptic Ulcer

Lucian A. Smith, M.D., F.A.C.P., assistant professor of medicine, Mayo Foundation; **Andrew B. Rivers,** M.D., F.A.C.P., late associate professor of medicine, Mayo Foundation. Appleton-Century-Crofts, Inc., New York, 1953. Illustrated. 576 pp. with index. $12.50.

Thoracic Surgery and Related Pathology

Gustaf E. Lindskog, M.D., F.A.C.S., William H. Carmalt, professor of surgery, Yale University School of Medicine; **Averill A. Liebow,** M.D., professor of pathology, Yale University School of Medicine. Appleton-Century-Crofts, Inc., New York, 1953. Illustrated. 863 pp. $15.

Adrenal Cortex

Transactions of the Fourth Conference November 12-14, New York. Edited by **Elaine P. Ralli,** M.D., associate professor of medicine, College of Medicine, New York University. Sponsored by Josiah Macy Jr. Foundation, New York, N. Y. 165 pp. with index. $4.

Operative Surgery, 6th edition (2 vol.)

Guy W. Horsley, M.D., F.A.C.S., associate professor of surgery, Medical College of Virginia; **Isaac A. Bigger,** M.D., F.A.C.S., professor of surgery, Medical College of Virginia. The C. V. Mosby Company, St. Louis, 1953. Illustrated. 1579 pp. $30.

Pediatrics, 12th edition

L. Emmett Holt Jr., professor of pediatrics, New York University College of Medicine; **Rustin McIntosh,** Carpentier professor of pediatrics, Columbia University. Appleton-Century-Crofts, Inc., New York, 1953. 1485 pp. with index. Illustrated. $15.

Surgical Pathology

Lauren V. Ackerman, M.D., professor of surgical pathology and pathology, Washington University School of Medicine. The C. V. Mosby Company, St. Louis, 1953. With 913 illustrations. 836 pp. with index. $14.50.

Rudolf Virchow

Erwin H. Ackerknecht. The University of Wisconsin Press, Madison, 1953. 304 pp. $5.

Physical Chemistry, 4th edition

David Ingersoll Hitchcock, Ph.D., associate professor of physiology, Yale University School of Medicine. Little, Brown and Company, Boston, 1953. With laboratory experiments. 266 pp. with index. $5.

May's Manual of Diseases of the Eye, 21st edition

Revised and edited by **Charles A. Perera,** M.D., associate clinical professor, College of Physicians and Surgeons, Columbia University. The Williams & Wilkins Company, Baltimore, 1953. 278 illustrations, including 32 plates with 93 colored figures. 512 pp. with index. $6.

The Heart Beat

Aldo A. Luisada, M.D., associate professor of medicine and director, division of cardiology, The Chicago Medical School, under a teaching grant of the National Heart Institute, Public Health Service. Paul B. Hoeber, Inc., New York, 1953. 311 illustrations. 527 pp. $12.

Annual Review of Medicine, Vol. 4

Windsor C. Cutting, editor; **Henry W. Newman,** associate editor, both of Stanford University School of Medicine. Annual Reviews Inc., Stanford, Calif., 1953. 452 pp. with index. $6.

Criteria for Retirement Editor, Geneva Mathiasen, secretary, National Committee on the Aging. Report of a national conference on retirement of older workers. G. P. Putnam's Sons, New York, 1953. 233 pp.

The Management of Universities. Samuel P. Capen, chancellor emeritus of the University of Buffalo. Foot and Stewart Publishing Corporation. Buffalo, N. Y., 1953. 287 pp. $4.75.

Atoms, Men and God. Paul E. Sabine. Philosophical Library, New York, 1953. 226 pp. with index. $3.75.

The Personnel Exchange

Faculty Vacancies

• Applications are invited for positions of assistant or associate professor of MICRO-ANATOMY and GROSS ANATOMY, duties to commence September 1, 1953. Further information may be obtained from Dr. R. L. deC. H. Saunders, anatomy department, Dalhousie University, Halifax, N. S., Can.

• Assistant resident in CLINICAL PATHOLOGY. Approved for entire training by College of American Pathologists; 1,000-bed teaching hospital; modern equipment; laboratory performs over 1,200 tests per day; research laboratories and facilities available; department has own teaching and research programs. Complete maintenance, including room, board, laundry and medical care, plus stipend of $900 per year. Contact director, department of clinical pathology and hospital laboratories, Medical College of Virginia, Richmond 19.

• PSYCHIATRIST: Desired for full-time position as university psychiatrist for student health services and as consultant to outpatient mental hygiene clinic and marriage counseling clinic. Prefer diplomate of American Board of Psychiatry or eligible, with training and experience in dynamic psychotherapy. Some teaching required. Salary open. Address: V-10.

• IMMUNOCHEMIST-IMMUNOLOGIST: Department of bacteriology, southern medical school, invites applications for position of instructor or assistant professor. Teaching 16 weeks; remainder of year for research. Include curriculum vitae and bibliography of publications in reply. Address: V-11.

• Board approved two-year residency available in thoracic surgery. University center; East. Requirements: three years approved training in general surgery. Immediate opening. Reply to: Address: V-12.

Personnel Available

• PEDIATRICIAN—30; seeks academic faculty appointment with opportunity for research; exceptionally trained; immediately available. For further information please write Woodward Medical Bureau, 185 North Wabash, Chicago.

• BIOCHEMIST: Ph.D., age 26, married. Four years' research on the biochemistry of human arterial smooth muscle, contraction and tonus mechanisms in relation to hypertension and arteriosclerosis. Desires opportunity to continue biochemical research on the arterial wall under cardiovascular investigator, with possibility of study toward M.D. degree. Available October 1953 or June 1954. Address: A-41.

• BIOCHEMIST or PHYSIOLOGIST: Ph.D., age 31. Active researcher and teacher at university medical school for five years. Fine scholastic record, public health senior research fellow, many publications. Interested in position allowing work for M.D. degree. Address: A-43.

• ANATOMIST: 32, married, children. National Cancer Institute fellow (1 year); experience in all branches of anatomy. Publications on request. Interested in research as well as teaching. Excellent references. Available after July 1, 1953. Address: A-44.

• BIOCHEMIST-PHYSIOLOGIST: Man, 30, married, Ph.D. Now assistant professor at medical college. Enthusiastic teacher with several years of research experience. Desires academic position at medical, dental or pharmacy school or liberal arts college where good teaching is considered important. Interested in graduate training program and fundamental research, if available. Administrative duties are very welcome. Publications. Location immaterial. Rank and salary open. Address: A-47.

• TEACHING FELLOWSHIP — OTOLARYNGOLOGY: special interest in problems of tumors in region of head and neck, particularly those related to cancer of mouth, larynx and pharynx. Man, single, 37. M.D. (surgeon) University of Cordoba. Head of clinic and assistant chief, department of otolaryngology, Hospital Espanol, Cordoba, 3 years; intern and resident, U.S., 1949-1951. Member scientific societies. Excellent references. Argentine citizen; good command of English. Address: A-49.

• TEACHING FELLOWSHIP — GYNECOLOGY: Man, 41, married. M.D., University of Cordoba. Supervision of gynecological patients 1939 to present, 2 years teaching in medical school and hospital. Member scientific societies. Publications. Argentine citizen; good command of English. Address: A-50.

• YOUNG SURGEON — Certified general and thoracic boards. University trained. Major interest thoracic and cardiac surgery. Experienced in applied cardio-pulmonary physiology. Some publications. References. Wishes full-time teaching appointment. Address: A-51.

• PHARMACOLOGIST—ADMINISTRATOR: Man, 31 married. Ph. D. Desires academic position, preferably with teaching duties. Four years industrial experience, and five years aca-

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To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school, department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Journal office, 185 N. Wabash Ave., Chicago 1, not later than the 10th of the month preceding publication.

demic experience. Interest in toxicology and neuropharmacology, and graduate student training. Highest references, publications. Address: A-52.

• RADIOBIOLOGIST - HISTOLOGIST - ZOOLOGIST: Man, 49, married, Sc.D. Experience mainly in radiobiology and histology. Prefers position in research institution or teaching and research in histology or zoology department with radiobiological research opportunities, or research appointment in department of roentgenology or radiobiology. Address: A-53.

• PARASITOLOGIST: D.Sc., man. Internationally known—widely travelled. Guggenheim fellow. Effective teacher on undergraduate level in zoology, in medical school and postgraduate clinical level. Numerous research papers and monographs in taxonomy of parasites, surveys, chemotherapy and toxicology. Gets on well with colleagues. Desires position in fall. Salary secondary to time for research. Liberal arts college will be considered. Address: A-54.

• ADMINISTRATOR-EDUCATOR: Man, 38; B.S., M.A., Ed.D; fellow, national science-medical societies; 17 years experience administrator national public health-medical organizations; university professional school teaching; 5 years intensive experience medical school organization management including affiliation, curriculum, fellowship and research programs, fund raising, physical development, purchasing, student selection; author six books, numerous papers. Seeks top-level administrative post medical school, foundation, east. Address: A-55.

• Position desired in medical school or university hospital by woman with M.S. in BACTERIOLOGY. Three years experience teaching bacteriology, serology, parasitology and clinical microscopy to medical students and medical laboratory technicians. Excellent experience in writing and statistical interpretations in medical fields. Formerly in charge of university hospital bacteriology and serology department. Address: A-56.

• INTERNIST: 35. Certified. Desires full-time academic appointment with research. Currently assistant professor of medicine, director of basic research laboratory (biochemistry and physiology), supported by several grant foundations. Active in clinical teaching. Research and clinical experience at several leading institutions, including fellowship abroad. Priority IV. More than 40 publications. Address: A-57.

• BIOCHEMIST: Ph.D., 1953. M.S. Analytical chemistry. Desires academic and/or research position. Strong medical science background. Four years diversified teaching experience. Research experience in enzymes, trace metals and histochemistry. Age 32, family, veteran. Sigma Xi, publications. East preferred. Address: A-59.

• M.D., Ph.D.—40 years of age, married. Interested in teaching as associate professor or higher of PREVENTIVE MEDICINE and PUBLIC HEALTH in medical or public health school; prefer associated opportunities for field study in public health. 15 years experience include general public health administration, industrial hygiene, epidemiology, immunology, basic and applied research, and some undergraduate and postgraduate teaching. Publications. Excellent references. Northeastern states preferred. Available on short notice. Address: A-60.

• A position in PREVENTIVE MEDICINE and PUBLIC HEALTH with administrative responsibility desired. Age 45, married; two children. 13 years extensive experience in administrative medicine, including the teaching of public health and preventive medicine. Broad background in multiple areas of medical and hospital economics. References. Fellow, American Public Health Association; diplomate, American Board of Preventive Medicine and Public Health. Address: A-61

• CHIEF X-RAY TECHNICIAN: White, male, 45 years. 20 years experience, 12 as chief of busy 20-employee department. Capable of assuming complete supervisory responsibility, teaching and general administration duties. Location desired outside New York area. Address: A-62.

• PHYSIOLOGIST: Ph.D. Man, 34. Desires research position. Special training in endocrinology, undergraduate major in veterinary medicine. Experiences in research. Address: A-63

• PATHOLOGIST: M.D. under 40, diplomate. Professor and chairman of department of pathology and chief of diagnostic services; distinguished academic career, varied experience, numerous publications; seeks post as full or associate professor with suitable responsibility and hospital laboratory directorship in progressive medical school. Available June 1954. Own department can be inspected by interested body. Reasons for change: overwork and poor financial return. Address: A-64

• BIOCHEMIST: Ph.D., 1952. Plasma protein fractionation, enzymes, blood coagulation,

fibrinogen. Six publications on these topics. Electrophoresis. Five years laboratory teaching experience in medical and dental biochemistry food analysis, blood chemistry. Seeking teaching position with or without facilities for research. Address: A-65

• Active researcher: Member of many scientific organizations. Interest in fields of ENDOCRINE and CARDIOVASCULAR RESEARCH. Ten years research and six years teaching experience. Present position as associate professor in large medical school. Desires change of location. Numerous publications. Excellent recommendations. Minimum salary stipulated. Address: A-66.

• BACTERIOLOGIST: Ph.D. Man. Age 27, married. Veteran. Present rank assistant professor. Would like teaching-research position in medical bacteriology, immunology or bacterial physiology. Teaching experience in liberal arts and medical schools. Prefer location in the west or northwest. Publications. References. Available September 1. Address: A-67.

• BIOCHEMIST: Ph.D. Age 31. Married. B.S. chemistry, biology. Ph.D. biochemistry; minors: chemistry and microbiology. Publications. Three years graduate teaching assistant, two years post doctoral studies, biochemistry and nutrition. Research interests: vitamin and amino acid biochemistry. Desires teaching position in biochemistry with research opportunity or hospital laboratories with professional, financial advancement. Address: A-68.

• BIOCHEMIST: Ph.D. 36. Associate professor with eight years teaching experience in medical biochemistry and three years teaching in immunology. Active research worker with approximately 30 publications in immunochemistry, protein chemistry, enzymology, nutrition, clinical chemistry and analytical chemistry. Experience in teaching postgraduate medical biochemistry. Desires teaching and research position in a medical school or a full-time research appointment at a hospital or other medical research institution. Available at any time in the fall or winter of 1953. Address: A-69.

• PEDIATRICIAN: Board eligible; single woman; 42. Protestant. A.B., M.S. and M.D. Extensive graduate training in hematology morphology and 2 years experience as marrow and blood morphologist in pediatric hematology. Teaching experience: university level-gross anatomy, 2 years; college level-health education, 3 years; high school level-biological science, 5 years. Medical practice: large university students' health service, 3 years; private practice, 1 year. 8 publications. Address: A-70.

• PHYSIOLOGIST: Male, married. Teaching and research experience. Numerous publications. Ph. D. Background in organic chemistry and biochemistry. Research interests in mammalian and human physiology. Interested in full-time academic position. Address: A-71.

• PHARMACOLOGIST: Man, 32. Family. B. S., pharmacy. M.S., Ph.D. pharmacology. Minors: biochemistry and physiology. Two years graduate assistant. One year E. I. Lilly fellow; for the second year National Institutes of Health predoctoral research fellow. Publications and research. Desires position with a medical school department of pharmacology. Time and financial aspects are of secondary importance. Interested particularly in a position that will provide a sound basis for future academic advancement. Available after June 1954. Address: A-72.

• UROLOGIST and SURGEON: Age 49, active research worker. Experienced teacher in physiology and urology desires teaching in both subjects and research position in medical school. 42 published papers and lectures and one book. Position should be permanent. East or West coast preferred. Available immediately. Address: A-73.

• ANATOMIST: Man. South American. Age 44, M.D. University of Paris. Languages: Spanish, French and English. Teaching experience in gross anatomy, 15 years. Head and professor of the department of anatomy since 1951. Publications. Educational awards. Seeking full-time position as professor or assistant professor of gross anatomy in any school but prefers a New England or West Coast medical school. Available: March 1, 1954. Address: A-74.

• PUBLIC RELATIONS DIRECTOR: 36 years of age. 10 years experience, science reporting. Radio educational dramas. Some film and TV writing and production. Fund-raising. Executive secretary. Interested in good offer from foundation, medical school or related fields. Free to travel United States or world. Member national association of science writers and American medical writers association. $10,000 minimum. Address: A-75.

• MEDICAL and GENERAL ENTOMOLOGIST: Ph.D., 1938. Man, age 42. Family. Associate professor in leading medical school with 18 years teaching and laboratory research experience, including fundamental and disease-transmission studies. Publications. Organizations. Editing. Desires change of location with permanent academic (undergraduate or graduate level). Research or other suitable position. Address: A-76.

• RESEARCHERS Man. Age 35. Family. Research associate and assistant. Interested in university offering research opportunity connected with teaching pharmacology. Experience largely in research with some teaching. Available for position on short notice. Publications and references. Address: A-77.

• SURGEON: 35. Seven years surgical training and teaching at the University of Goettingen, Germany. Experience in research and publications both in Europe and USA. Anticipating completion of American Board of Surgery requirements in June 1954. Wishes to resume academic career. Special interest in surgical physiology. Address: A-78.

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